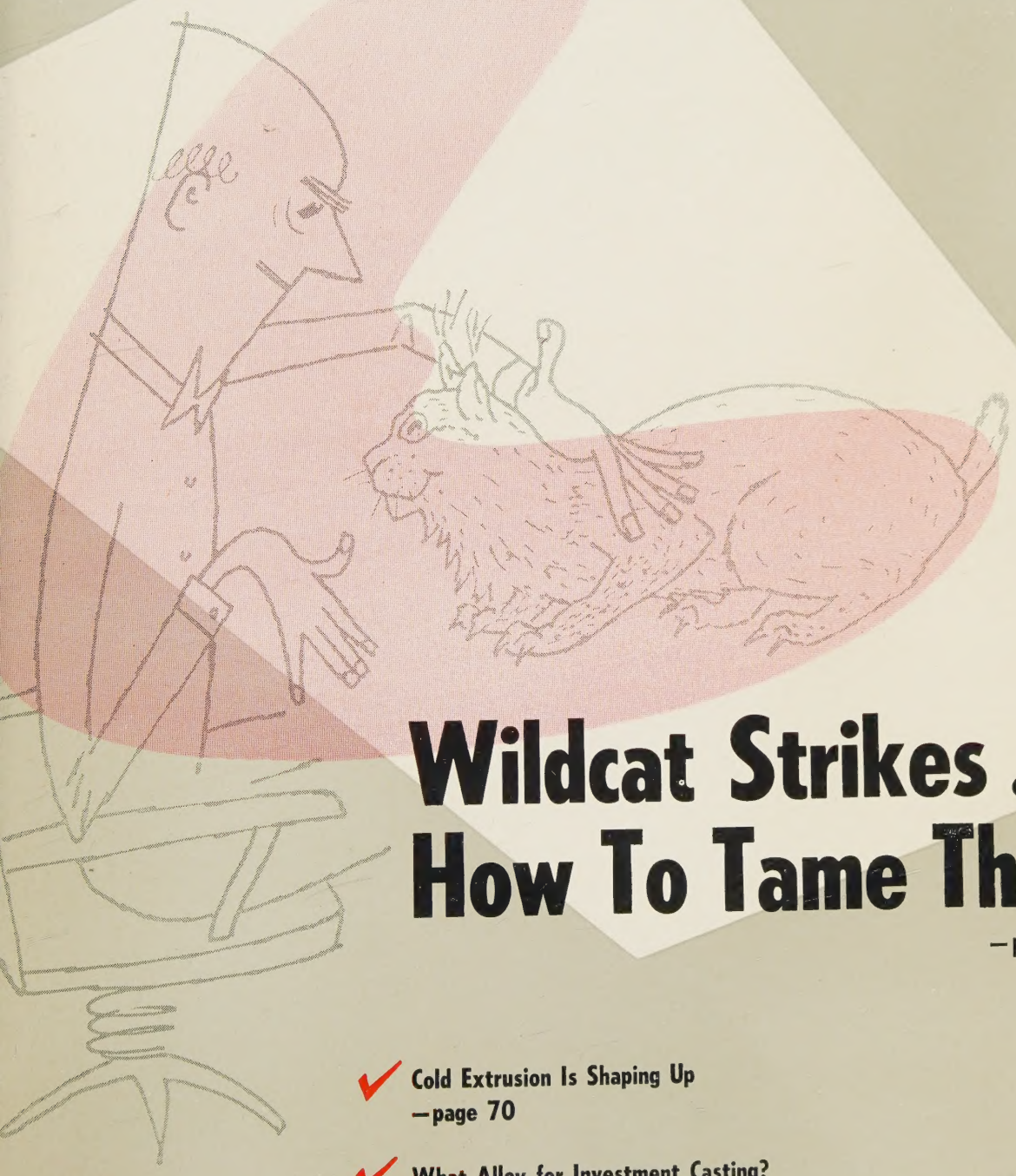
OCTOBER 3, 1955

STEEL
The Metalworking Weekly



Wildcat Strikes . . . How To Tame Them

—page 37

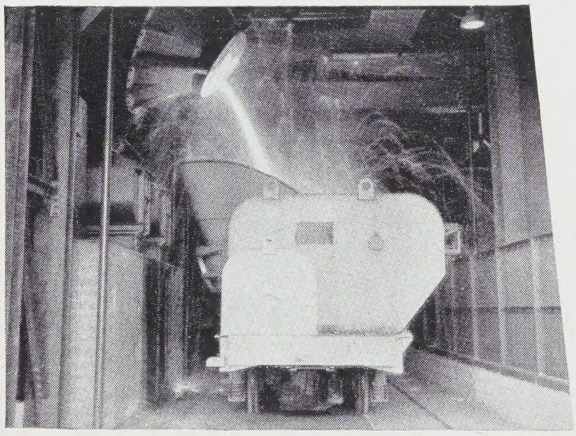
EC&M Control is Safe for Hot Metal Applications

Bessemer Converters operate *safely* under EC&M Control. This three-converter installation is typical of many EC&M controlled converters.

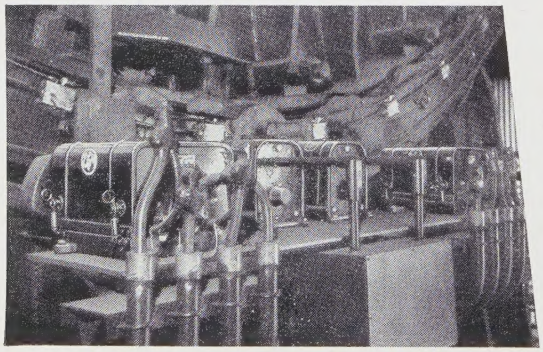
Wherever hot metal is stored, handled, or processed, many firms, acquainted with EC&M value, select this quality apparatus because of their confidence in it—in the engineering and experience which it represents.

Typical hot metal applications include (1) Ladle Cranes, (2) Hot Metal Cranes, (3) Hot Metal Mixers, (4) Bessemer Converters, (5) Storage Vessels, (6) Ladle Cars—where only tried and true equipment, which represents the utmost in safety and dependability, is acceptable.

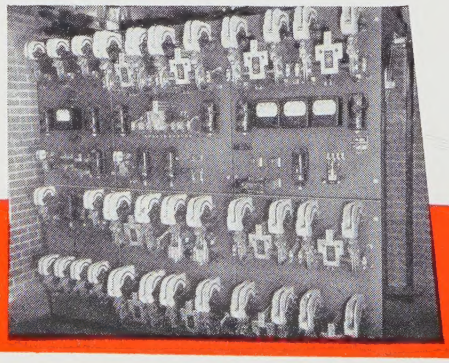
Listed below are a few of the EC&M products especially designed for the requirements of hot metal service. They have proved themselves highly successful in many applications throughout the years. Specify EC&M Control for hot metal applications.



Hot metal mixer pouring into hot metal car, both of which are operated by EC&M Control.



EC&M power-circuit type Limit Stops mounted on hot metal mixer (shown above), provide positive slowdown and final stopping.



LINE-ARC Contactor Control for the hot metal car propel-motion.

EC&M EQUIPMENT Especially Designed for Hot Metal Service

1. Basic Control Systems for Bessemers & Mixers, many originated by EC&M.
2. Dead - Man's Master Switch.
3. Air and Magnetically-released Brakes.
4. Positive-type Limit Stops for Slowdown and Final Stopping.
5. LINE-ARC Magnetic Contactor Controllers.

THE ELECTRIC CONTROLLER & MFG. CO.
4498 LEE ROAD ★ CLEVELAND 28, OHIO

STEEL
The Metalworking Weekly

OCTOBER 3, 1955
Vol. 137 No. 14

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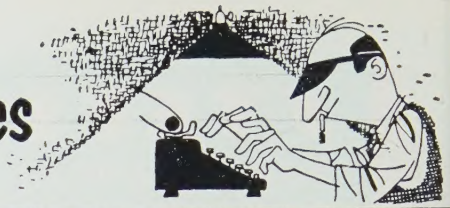
behind the scenes



Hold That Wildcat

An indefatigable old Roman, name of Pliny, used to say that it was a sin to go through a whole day without learning something new. He learned so much himself he wore out droves of secretaries just dictating to them; when he wasn't dictating, he was making notes. He even made notes while sitting in his bath—which may or may not have inspired a modern manufacturer to devise a submarine fountain pen.

Well, all right. We figured it wouldn't do any harm to learn something new, so we investigated the background of the wildcat strike control story (page 37). The first step, of course, was to investigate the wildcat, per se, so naturally we turned to Elliot's, "Monograph of the Felidae" (London, 1878). This excellent work informs us that the wildcat has short intestines, and as far as we are concerned that's today's ration of additional learning.

When STEEL's editors assembled the story on wildcat strike control, they didn't consult Elliot at all; they consulted management, union officials, large and small manufacturers. Detroit Editor Floyd Lawrence stalked about the Motor City, pouncing like a lynx on every bit of pertinent information; the result is a categorical revelation of editorial findings aimed at wildcats. It is very interesting.

Slumber in Action

Last week STEEL carried an interesting item on innerspring mattresses and bedsprings. It had to be cut considerably because of space restrictions, but we eagerly latched on to the torn fragments.

"Average person," said the fragments, "spends more than 120 days in bed each year. Mattress designs are directed toward giving maximum conformity to contour of the body with equal pressure at all points."

Sleep comes so natural, the orthopedic approach toward slumber sort of makes you wonder. Our ancestors clear back to the flood must have been sprung completely out of shape by reason of sleeping in featherbeds, bedcords, hammocks, rock piles and trees. Their descendants, however, need never again battle with backache, twisted chassis, bowed dorsals or insomnia. Today, we are privileged to sleep on scientifically coiled steel; we may wake up refreshed, vigorous and straight as so many ramrods. All except the average person, that is. "The average person," said the fragments, "turns and twists 20 to 40 times a night, sleeping in 15 to 20 positions; few remain motionless as long as 1 hour."

Nearly 8 million bedsprings will be made this year, and if the above findings are true, those mattresses are going to take an awful beating.

Sales Story

Advertising Age quotes the Magazine Advertising Bureau (MAB) as saying that the dollar volume of measured national advertising increased more than four times since 1939. It went from $333 million to $1.5 billion—and that's a respectable amount of money to lay out for anything. The line that caught our attention, however, was this: Out of 71 companies that had discontinued magazine advertising, 52 had either gone out of business or have discontinued all forms of national advertising!

Turn to any of STEEL's advertising space at random; pick out any advertiser. If he has been in business for some time, he has spent more money this year in magazine advertising than he did last year—and 10 to 1 he enjoyed more gross business, too.

Hit That Line

Sometimes you can relax yourself by cooking up a missing thought. Take this banker limerick, and add the last line. We'll print the best one, and send a portrait of a banker to all contestants:

A banker of medium weight
Took a seat, but discovered too late
That while he was agile
The armchair was fragile,

. . . . . .

Shrdlu

(Metalworking Outlook—Page 31)

REPUBLIC STEEL
...ready with the answers to your strength-to-weight problems...

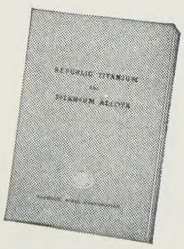
One man's problem may call for alloy steel . . . another's a stainless steel . . . and a third's a special carbon steel . . . all made by Republic. At Republic, we roll more types of steels and make more types of steel products than any other producer. From decades of experience with many problems and many fabrication processes, the Republic Technical Man can hand you the answer that meets your needs.

Whether your product must move lightly, stand still, look beautiful, or fight corrosion . . . the Republic Technical Man and his background of experience are prepared to serve you.

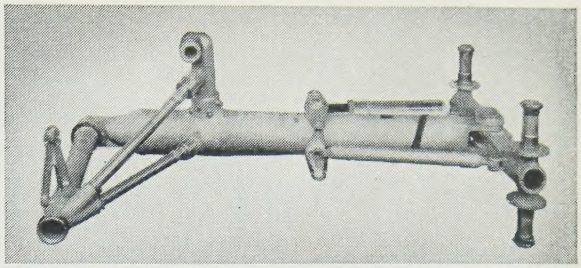
The coupon below will bring you information about Republic Titanium, Republic Stainless Steels, and Republic Alloy Steels.

REPUBLIC STEEL

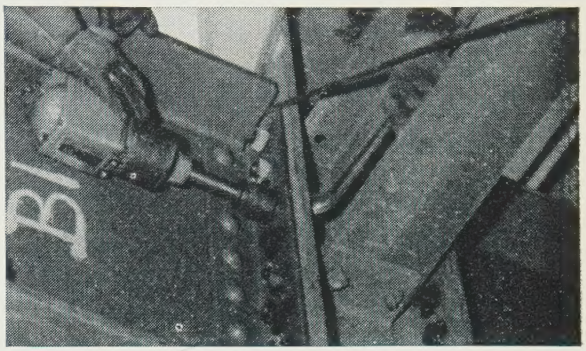
World's Widest Range
of Standard Steels and Steel Products



LATEST FACTS ABOUT REPUBLIC TITANIUM



WHAM! EVER THINK OF THE TREMENDOUS STRAIN on the landing gear when the huge aircraft you are in hits the runway at high speed? Don't worry, the landing gear can take it. Republic Alloy Steels provide the high strength and toughness needed to withstand high impact and heavy loads in aircraft landing gear—provide the hardenability to resist wear on bearing surfaces.



REPUBLIC HIGH STRENGTH STRUCTURAL BOLTS provide a new, fast, economical way to fasten structures permanently. Bolting reduces noise. Replaces field riveting. Is often safer and easier than other methods. Work usually is done from within structure, eliminating costly scaffolding. Made in accordance with ASTM Spec. A325. Bolts marked for easy identification to conform to Spec. for Assembly of Structural Joints, 2-27-54, Research Council on Riveted and Bolted Construction.

SAVE UP TO 25% IN WEIGHT, EVEN 50% with Republic High Strength Steel. Yes, when you engineer earth moving equipment, truck and gasoline trailers, railroad cars, and other mobile equipment to take full advantage of the high strength, low weight and corrosion-resistance of Republic High Strength Steel, you can cut weight up to 50%. And you can lengthen equipment life, too.

REPUBLIC STEEL CORPORATION
3120 East 45th Street
Cleveland 27, Ohio

REPUBLIC STEEL

Please send me more information on:

☐ Titanium ☐ High Strength Bolts
☐ High Strength Steel ☐ Alloy Steels

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

K-8287

LETTERS
TO THE EDITORS

Editorial Tells Tale

Your editorial, "Cheers and Smears" (Aug. 1, page 33), was wonderful. I have been closely aware of the situation since I know both sides of the story regarding my uncle, Harold E. Talbott, the former secretary of the Air Force. I would like several copies to mail to my political and editorial friends.

George S. Greene Jr.
730 Spring Lane
Philadelphia

Series Stimulates Imagination

Congratulations on your 1955 Program for Management series. These articles stimulate the imagination and open doors to creative thinking. Because each member of our management group reads them, we would appreciate two copies of each article for our permanent management file. Please keep these informative articles coming!

Robert F. Kuemmerle
Pentagon Pattern & Engineering Co.
Chicago

Because of the interest created by these articles, I find they are removed by prior readers before I see our copy of STEEL. I would appreciate reprints for my own file.

Alex Treskov
Chief Industrial Engineer
Eastern Air Devices Inc.
Dover, N. H.

Interested in Expansion

We would like six copies of your article, "Big Expansion in Steel" (Sept. 5, page 41). We are vitally interested in the expected expansion in the steel industry over the next few years as portrayed in this article.

Charles Halcomb
Deputy Director
Iron & Steel Division
Business & Defense Services Administration
Department of Commerce
Washington

Magnesium Prices Compared

Although I've heard nothing but favorable comments about your story, "Magnesium: A Metal That's Going Places" (Sept. 5, page 46), I did notice a small error. The statement is made that the magnesium price level is "7 cents a pound above that of a year ago." Actually, the price level for primary is

(Please turn to page 12)

With 500 ft. frontage on a main transport artery, and with complete port and rail facilities nearby, this substantial plant offers unlimited opportunities for U.S. manufacturer desiring to establish in Canada.

Located in the heart of Ontario's rich market . . . close to metropolitan areas where over 40% of Canada's retail sales are made.

Included in the parcel:

— One, 6256 sq. ft., 2-storey, brick building including 4000 lb. capacity freight elevator.

— One. 11,480 sq. ft., single-storey brick building containing 7½-ton and 5-ton Overhead Cranes; and a 7400 sq. ft. adjoining building with floor-operated, standard overhead crane and indoor railway siding.

— One, 14,896 sq. ft. single storey brick building with 7½ ton overhead crane and outdoor rail siding.

— One, 2534 sq. ft. Brick Veneer and frame office building heated by oil-fired hot water system. Also 907 sq. ft. building suitable for time office, etc.

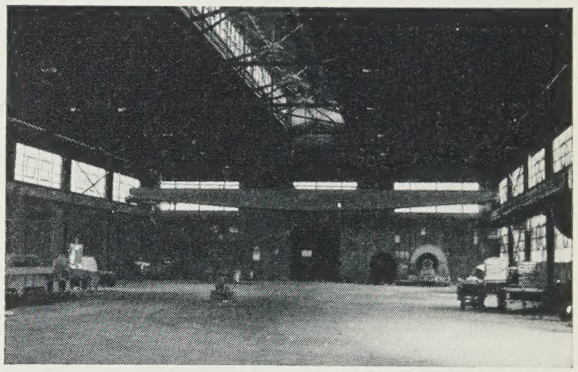
— One, 2684 sq. ft. frame garage.

— One, 1377 sq. ft. building for factory washrooms, etc.; and a 2013 sq. ft. wooden lean-to.

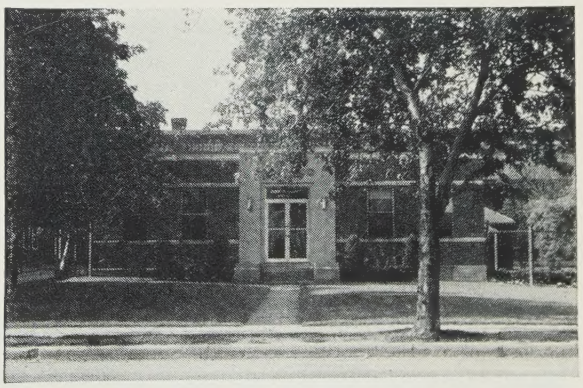
— 680 sq. ft. Boiler Room fully equipped; and Generating Room with complete motor generator set.

All services, including electricity, water, railway, caretaking, etc., ready for use. Price - $2,000,000.00.

For full particulars, write to Mr. D. A. Lindsey



READY FOR OCCUPANCY. Plant has been cleared, and purchaser may have immediate possession. Picture shows part of interior of large, single-storey steel truss brick building with 7½ ton overhead crane.



MODERN BRICK OFFICE faces main industrial paved thoroughfare. Centrally located, but with easy, fast access to all highways, port facilities, and neighbouring industry.

DOMINION FOUNDRIES AND STEEL LIMITED, Hamilton, Ontario, Canada

LETTERS

(Concluded from page 10)

5½-cents above the level of a year ago. Standard grade sheet is 5 cents higher.

Clayton L. Dickey
Public Relations Dept.
Dow Chemical Co.
Midland, Mich.

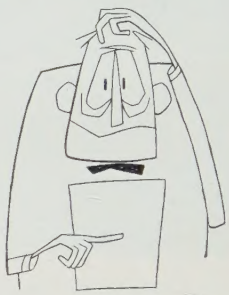
Business Trends in Column

Enjoyed the sixth article in STEEL's ten-part 1955 management series, "Business Trends: Put Them to Work" (July 18, page 93). May I reprint parts of it? I would like to use the material as part of my daily column.

George Triff Jr.
Business-Finance Editor
Peoria Star
Peoria, Ill.

• *Permission granted.*

Source of Information?



You did a fine and comprehensive job on the story, "Beyond the Metals," Part I (Aug. 1, page 72), but there is one question concerning the chart of thermal conductivities of superrefractories (page 74). I would like to know where you got this information. It doesn't seem to agree with information we have developed, or any we have seen.

H. T. Pierpont Jr.
Sales Manager
Refractories Division
Norton Co.
Worcester, Mass.

• *The chart is an average of values obtained from graphs prepared by Norton Co., Carborundum Co. and Battelle Memorial Institute.*

Specification Query

We have one of your Specifications Handbooks, but it does not list anything regarding workmanship, such as porosity. Can you supply a complete specification or tell us where we may obtain it?

Wm. Kratt
President
Wm. Kratt Co.
Union, N. J.

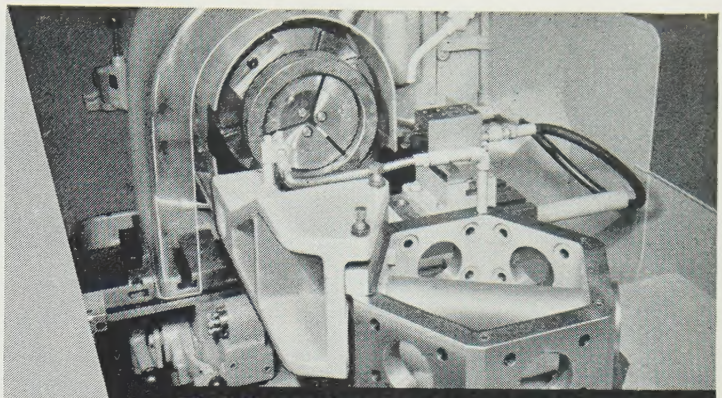
• *Our handbook gives only chemistry of materials, not physical properties. To secure the complete specification, write to Miss Margaret P. Haskin, Purchase Specifications and Standards Branch, Department of the Navy, Bureau of Ships, Washington 25, D. C.*

A revised edition of the handbook, Cross Index of Chemically Equivalent Specifications and Identification Code for Ferrous and Nonferrous Alloys *(Supply and Logistics Handbook H 1A), is available at $1.75 per copy through the Superintendent of Documents, Washington 25, D. C., or your local Department of Commerce field office.*

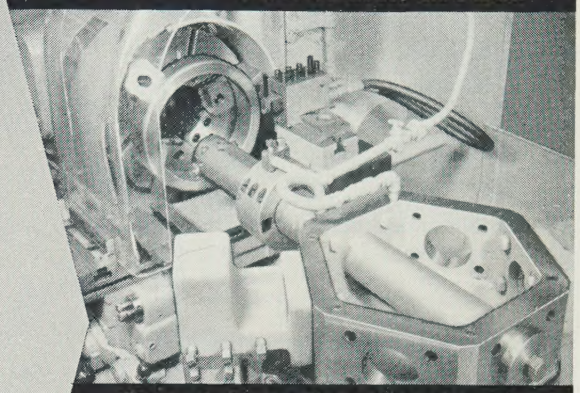
and capable of doing jobs like this...

Machine tools do not pay dividends unless they are cutting metal. Engineering the tooling around the parts to be produced reduces the setup time to a minimum, and in many cases doubles the production per labor hour.

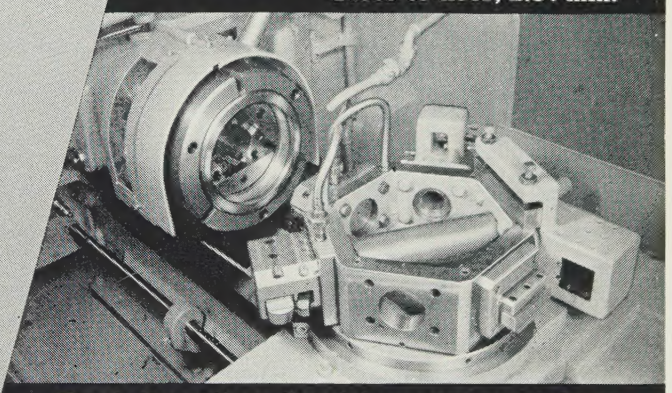
In this case high production methods of tooling for automatic lathes were simplified and applied to three 7B J&L Universal Saddle Type Turret Lathes. Inner and Outer Ball Bearing Races and Roller Bearing Races are produced on the same machines. Setup time from one lot to the next does not exceed fifteen to twenty minutes per machine.



First Operation: One tool mounted on the Hex Turret turns the O.D. while a tool mounted on the rear of the cross slide faces one end. At the end of the facing cut, the radius on the O.D. is formed. Floor-to-floor, 1.94 min.



Second Operation: Location is taken from the two previous finished surfaces. Boring and I.D. chamfering are performed by using tools mounted on the Hex Turret while facing and forming of the O.D. are finished by tools mounted on the rear of the cross slide. Floor-to-floor, 2.57 min.



Third Operation: Special wrap-around jaws mounted on a power operated three-jaw scroll chuck are used for holding the finish turned ring when grooving. The groove is formed by a radius tool held in a bar mounted on the Hex Turret (this applies to internal or external straight or taper races). I.D. is also chamfered in this operation. Floor-to-floor, 1.67 min.

MACHINE TOOL DIVISION

UNIVERSAL TURRET LATHES • FAY AUTOMATIC LATHES • AUTOMATIC DOUBLE-END MILLING & CENTERING MACHINES • AUTOMATIC THREAD & FORM GRINDERS • OPTICAL COMPARATORS AUTOMATIC OPENING THREADING DIES & CHASERS

517 Clinton St., Dept. 710, Springfield, Vt., U.S.A.

Jones & Lamson Machine Company
517 Clinton St., Dept. 710, Springfield, Vt., U. S. A.

Please send me the J & L Machine Tool Replacement Information Kit.

*Name*_____

*Title*_____

STEEL
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BPA

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NBP

CALENDAR
OF MEETINGS

Oct. 3-5, National Electronics Conference Inc.: Annual meeting and exhibit, Sherman hotel, Chicago. Conference's address: 84 E. Randolph St., Chicago 1, Ill. Executive secretary: John S. Powers.

Oct. 3-7, American Institute of Electrical Engineers: Fall general meeting, Hotel Morrison, Chicago. Institute's address: 29 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Oct. 6-7, National Foundry Association: Annual meeting, Edgewater Beach hotel, Chicago. Association's address: 53 W. Jackson Blvd., Chicago, Ill. Secretary: Charles T. Sheehan.

Oct. 6-8, Society of Industrial Designers: Annual meeting, Woodner hotel, Washington. Society's address: 48 E. 49th St., New York 17, N. Y. Secretary: Sally G. Swing.

Oct. 7-8, American Ceramic Society Inc.: Refractories division meeting, Bedford Springs hotel, Bedford, Pa. Society's address: 4055 N. High St., Columbus 2, O. General secretary: Charles S. Pearce.

Oct. 9-12, Pressed Metal Institute: Fall meeting, Grove Park Inn, Asheville, N. C. Institute's address: 3673 Lee Rd., Cleveland 20, O. Managing director: Harold A. Daschner.

Oct. 9-13, Electrochemical Society Inc.: Fall meeting, Hotel Statler, Pittsburgh. Society's address: 216 W. 102nd St., New York 25, N. Y. Secretary: Dr. Henry B. Linford.

Oct. 10-12, American Mining Congress: 1955 metal and nonmetallic mining convention, Las Vegas, Nev. Congress' address: 1102 Ring Bldg., Washington, D. C. Executive vice president: Julian D. Conover.

Oct. 10-12, American Society of Lubrication Engineers and American Society of Mechanical Engineers: Joint lubrication conference, Antlers hotel, Indianapolis. Information: American Society of Lubrication Engineers, 84 E. Randolph St., Chicago 1, Ill. Secretary: William P. Youngclaus Jr.

Oct. 10-12, Truck Body & Equipment Association Inc.: Annual convention and exhibit, Morrison hotel, Chicago. Association's address: 1616 K St. N.W., Washington 6, D. C. Executive manager: Arthur H. Nuesse.

Oct. 11-15, Society of Automotive Engineers Inc.: Aeronautic meeting, aircraft production forum and engineering display, Hotel Statler, Los Angeles. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: John A. C. Warner.

Oct. 12-14, Gas Appliance Manufacturers Association: Annual meeting, El Mirador hotel, Palm Springs, Calif. Association's address: 60 E. 42nd St., New York 17, N. Y. Secretary: H. Leigh Whitelaw.

Oct. 13-15, Foundry Equipment Manufacturers Association Inc.: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Association's address: One Thomas Circle, Washington 5, D. C. Secretary: C. R. Heller.

Oct. 14-16, Metal Treating Institute: Annual meeting, Warwick hotel, Philadelphia. Institute's address: 271 North Ave., New Rochelle, N. Y. Secretary: C. E. Herington.

Oct. 16-18, Conveyor Equipment Manufacturers Association: Annual meeting, the Greenbrier, White Sulphur Srings, W. Va. Association's address: One Thomas Circle, Washington 5, D. C. Executive vice president: R. C. Sollenberger.

Oct. 17-18, American Coke & Coal Chemicals Institute: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: 711 14th St. N.W., Washington 5 D. C. President: Samuel Weiss.

Oct. 17-18, Boston Conference on Distribution: Hotel Statler, Boston. Information: Daniel Bloomfield, director, 80 Federal St., Boston 10, Mass.

Oct. 17-19, American Management Association: Office management conference, Hotel Statler, New York. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president: James O. Rice.

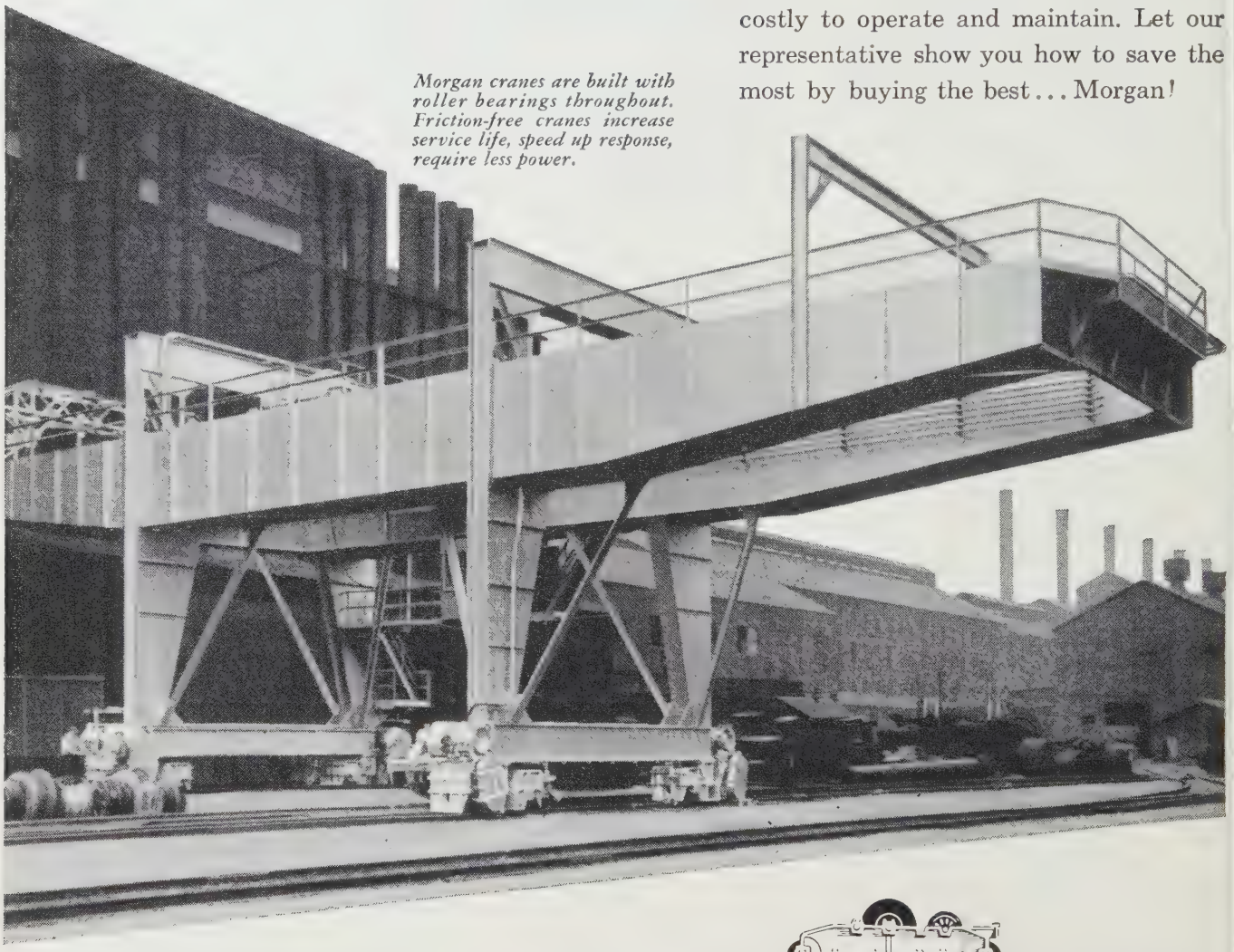
How Morgan keeps cranes "rolling"

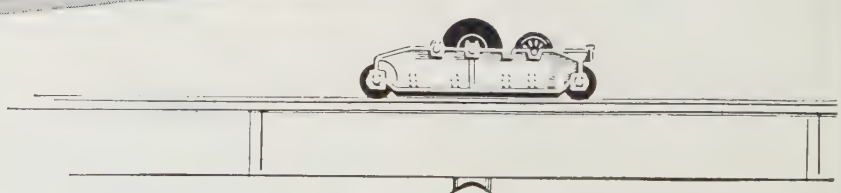
• MORGAN "Anti-Friction Engineering" keeps cranes rolling by providing precisely correct bearings and mountings for each specific application . . . your assurance of longer trouble-free operation, lower maintenance costs.

"Anti-Friction Engineering" is another vital link in the chain of features that makes Morgan cranes best in the business.

Performance records prove that advanced design and heavy-duty construction of Morgan cranes make them less costly to operate and maintain. Let our representative show you how to save the most by buying the best . . . Morgan!

Morgan cranes are built with roller bearings throughout. Friction-free cranes increase service life, speed up response, require less power.





The Morgan Engineering Company manufactures overhead electric traveling cranes, gantry cranes, charging machines, plate mills, blooming mills, structural mills, shears, saws, and auxiliary equipment.

THE MORGAN ENGINEERING CO. *Alliance, Ohio*

Metalworking Outlook

Nickel Diversion

Look for ODM Director Arthur Flemming to order diversion of 2.5 million lb of nickel from the stockpile in both November and December. That amount has just been diverted for October, bringing the total since February to 15.75 million lb. Somewhat less aluminum will be available to fabricators in the fourth quarter, partly because about 100 million lb of the light metal will have to be delivered to the stockpile before the end of December. An estimated 788 million lb of primary aluminum was turned out in the third quarter; some 767 million lb will be this period.

Music for 1956

CIO economists join their voices to the chorus currently singing praises of 1956's economic prospects. Admitting that they were surprised at the size of 1955's upturn, they foresee sustained high notes for 1956. Why was the boom bigger than expected? "The upward surge of consumer spending and consumer-related activities, backed by rising consumer credit and mortgage debt" account almost entirely for the rise, they say.

Jobs, Jobs, Jobs

U.S. employment will continue to grow by 1,250,000 additional jobs annually for the next 15 years, despite automation. So predicts General Electric Co.'s Dr. W. R. G. Baker, who says that nearly 1000 plants will spend from $250,000 to $500,000 each in 1955 on facilities of a super-mechanical nature, controlled by electronic processes.

Venezuela To Get Steel Plant

Fiat Motor Car Co., Turin, Italy, submitted a low bid of $128 million to build a steel plant for Venezuela. Fiat won out over bids of groups from six other countries, including the U.S. Construction will begin immediately, and production is planned for early 1958. The eventual capacity will be 421,000 tons yearly at a site near Puerto Ordaz at the junction of the Orinoco and Caroni rivers. Facilities will include three Siemens-Martin furnaces of 175 tons capacity each, a reversible blooming mill, two rolling mills for light structural sections and rails and three combined mills to roll reinforcement bars and wire rods. Venezuela is using 600,000 tons of steel a year, 14 times the 43,000 tons used in 1943. Per capita consumption exceeds 220 lb a year, highest in Latin America.

Hassle on Exports

Study carefully the list of some 900 products on which the State department may offer tariff cuts at the next general session of GATT. The General Agreement on Tariffs & Trade will convene in Geneva, Switzerland, next January. You can get the list from the State department whose Committee for Reciprocity Information will hold hearings starting Oct. 31. If you want to be heard by the group, make your application by Oct. 17. Also starting Oct. 31, the Tariff Commission will hold hearings on the

extent to which U.S. concessions on the listed products may be made without injuring domestic industry.

New Rules from the Pentagon

Watch for changes in Defense department buying. They'll come as a result of new rules laid down by Assistant Secretary Thomas P. Pike governing placement of contracts for $10,000 or more for 1000 strategic and critical items on the Preferential Planning List. New instructions are designed to implement a controversial directive issued last December by Secretary Charles E. Wilson. It said that price was not to be the only consideration in awarding contracts. The instructions list nine factors to be considered in making awards.

Small Business Gains

The July share of defense contracts awarded to small business increased 24 per cent from a year earlier. For the first seven months of 1955, small business received 23.3 per cent of the total contract awards, compared with an average of 18.5 per cent over the last 4½-years.

Boom in Basic Metals

Both the power and transportation aspects of the St. Lawrence development promise to boom the basic metals industries in New York state. Examples: Aluminum Co. of America will spend some $26.7 million on new primary capacity at Massena by 1958 (see page 41); Republic Steel Corp. is considering more development of its Port Henry district mines and of its leases near Santa Clara and Ft. Ann; Jones & Laughlin Steel Corp. plans more beneficiation of New York ores at a plant south of Massena; American Steel & Wire Division of U.S. Steel Corp. is showing new interest in ore properties in Clinton county; National Lead Co. is considering locating a titanium smelter in the central Adirondacks. Sidelight: Ten Canadian companies are sniffing about for New York state locations of branch plants.

Danger, Fire

First-half fire losses totaled $470 million, up 3 per cent from the same 1954 period. Much of that loss is from industrial damage. A survey by one insurance company shows that the average amount recoverable on fire losses is only 52 cents on the dollar because of inadequate coverage. Reviewed your coverage lately?

Straws in the Wind

Anaconda Co. discloses plans to make alumina from clays found in the Northwest . . . Dravo Corp., Pittsburgh, will begin commercial manufacture of prefabricated heliports, landing areas for helicopters . . . The Air Force is studying the possible need for a big increase in the air arm as a result of Soviet gains.

A Grim Reminder

President Eisenhower's heart attack brings home to every American the grave implications of his possible loss to the nation.

To those charged with the destiny of a business organization, the President's illness is a grim reminder of the responsibility they owe the men to whom they have delegated authority.

A business enterprise is usually thought of as money, plant, equipment, processes, materials, markets and men. Increasing recognition is being given to men as the most important element.

Energetic and capable people are needed to serve as the motivating force in carrying out the interrelated functions of a business. Without them the other elements are meaningless.

The implications are clear: Because the pressures of office are inevitable, the general well being of the individual, as well as his health, must be considered.

Top management has the responsibility to select and place people in positions for which they are best suited and from which they will derive full satisfaction. It means keeping people happy and busy in their jobs but not overloading them with assignments beyond their physical and mental capabilities.

It's part of the development of a healthier organization with the zest and enthusiasm to get the best job done. But practicing good human relations is not the complete answer.

More and more companies are going to health programs to safeguard their management personnel and uncover unsuspected and potentially serious illnesses. Some plans are obligatory; others are voluntary. Some cover only top executives; others go down as far as the foremen.

All plans are prompted by the same conclusion: Management, whether it is in government or business, whether it is at the top, the middle or the bottom, is an expensive investment. Like plant and equipment, it should be protected.

But the investment cannot be measured in dollars and cents. Check the obituary columns in this or any other publication. Reflect upon the loss an organization suffers through the untimely death of a capable executive.

The grim reminder is always there. In the final analysis, men, not machines, make a business.

Irwin H. Such

EDITOR

Do you really know the alloys you buy?

For instance, are you SURE of:

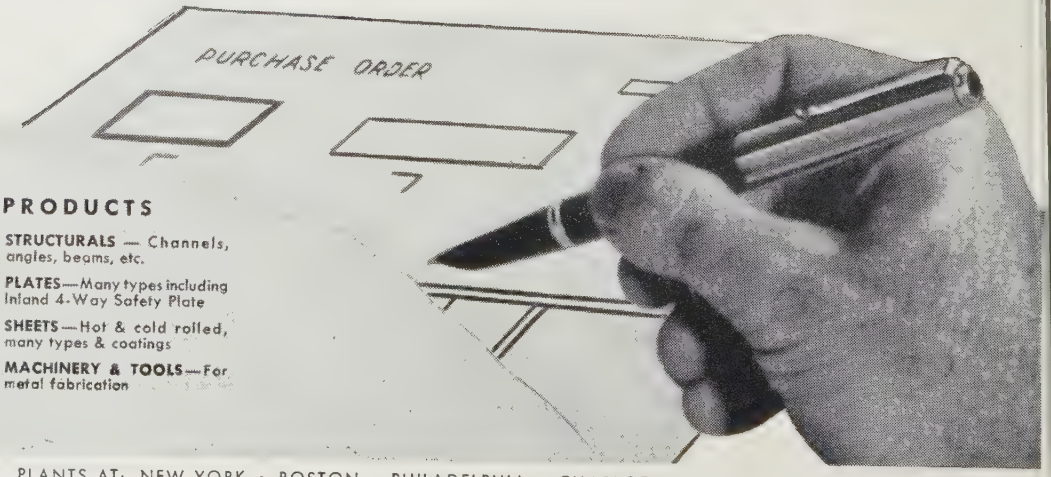
- **Heat identification** . . . not just type identification but the positive identification of your particular heat so you can be sure the alloy steel is everything it is supposed to be?
- **Chemical analysis** . . . not just the chemical range for the type, but the specific analysis of the heat from which your steel was rolled?
- **Hardenability** . . . not just the average hardenability for the type of alloy, but the actual test-proved hardenability of your particular heat of steel?

If you don't know these important facts, you may be in for trouble—loss of time and money; breakdown of equipment. It can happen when you're not sure of your alloys.

But when you work with Ryerson alloys you *can* be sure—sure of the steel you get, sure of what it will do—because Ryerson alloys are certified by an 8-step quality control program.

Every step has a specific purpose—every step is designed for your protection, but doesn't cost you a dime. For alloys with all questions answered, call your nearby Ryerson plant.

RYERSON STEEL



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STAINLESS—Allegheny bars, plates, sheets, tubes, etc.

TUBING—Seamless & welded, mechanical & boiler tubes

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With unauthorized strikes rising, industry wants to know . . .

How To Tame Wildcats

IT'S MIGHTY tough for many companies to lick the weight of wildcats.

One steel company has suffered 135 unauthorized walkouts in the last 20 months. An auto firm lost more than 100 hours per employee during the last year due to work stoppages in defiance of authority. Many firms report the cost of unsanctioned strikes far exceeds the price of union contract demands.

The Cost—Every 20 seconds of lost production at some auto plants means a car isn't produced. At the same time, costs continue to mount. One source estimates a bad year of wildcats can easily cost larger firms over $1 million, often more.

The problem isn't peculiar to the larger companies. Unpredictable halts in production cost a foundry supplying the auto industry top contracts for failure to meet delivery dates. A history of wildcats soon gets around among purchasing agents who have been clawed by parts shortages. Many would-be suppliers don't get considered when bids are on the table.

The Results—Conversely, a wildcat strike in a prime contractor's plant cuts suppliers' orders back accordingly. Because most suppliers' profits are carefully balanced on an uninterrupted volume, a wildcat in a customer's plant may lick the gravy off the job or even break the back of the small supplier. While losses to the smaller firm may not be so spectacular, often they are more lethal.

Getting statistics on losses due to wildcat strikes in metalworking is difficult, in part due to the nature of the wildcats themselves. Ten men decide it's too hot in a grinding department and request a fan. Five minutes of production are lost until the fan arrives. Or a trim crew on an auto assembly line finds only five men are on the job instead of the usual six and stop work for 10 minutes until a substitute can be pulled on the job. Or they can slow down to five-sixths of the normal output, and the wildcat becomes a slowdown instead of a stoppage.

Language — Perhaps the only complete definition of a wildcat is: An interruption of normal production in defiance of authority.

Ambiguous — "Defiance of authority" covers a multitude of sins. One authority in a true wildcat must be the recognized bargaining agent. Not only must the workers defy orders of the shop supervisors to return to work, but under the no-strike clauses of most union contracts, union representatives also must order them to return to work. But it's no secret to most management men that many strikes which dwell in the sanctity of the wildcat are planned.

That's because the union can be fined for any walkout it sanctions which breaks the no-strike clause in the contract. Determining whether such a strike is a true "wildcat" plays hob with the statistics.

One labor relations expert candidly observes that there are probably few spur-of-the-moment strikes. Most strikes, he feels, are planned and result of a compounding of gripes and grievances.

Guardians — Supervisors trained to detect sagging morale in their departments frequently can bring the matter to management's attention in time to prevent trouble. Employees want their complaints listened to and acted on, and even the normal channel of the grievance procedure may be considered too slow unless the employees are constantly reminded that management is aware of the problem.

Because sagging morale is a hallmark of wildcats a large school believes that better employee communications are the key to preventing wildcat stoppages. They point out that labor must be made aware of the problems of management and must be made to know that management is aware of the problems of labor. The recent visit of David McDonald, United Steelworkers' president, to Great Lakes Steel Corp. exemplifies this point of view.

Case in Point — Said Mr. McDonald in referring to 60 stoppages between June 30, 1954, and Aug. 31, 1955: "There has been difficulty here at Great Lakes Steel, difficulties which I believe have arisen out of a lack of knowing one another intimately, and a lack of proper communications between one another . . . I would like to see a situation develop here where it will not be necessary for men of either the union or management to resort to actions which are outside the regular operation

Wildcats—The Nature of the Beast

Who starts wildcats?

Most wildcats are planned work stoppages instigated by a few individuals attempting to demonstrate their strength or leadership. New union committeemen and deposed union representatives in the plant are the chief potential source of wildcat leadership.

What causes wildcats?

Almost invariably, union politics. Reasons cited (like not enough men on the crew, excess heat, improper discipline) may be considered the reason by the majority of workers who walk out. This is just the excuse the leaders have given them.

Why does the majority follow?

In part because it believes the gripe is the real reason for the strike. But, more importantly, the majority is not active in the union. These people want to avoid trouble and walk out for fear of reprisal, even though the strike will cost them money.

Can wildcats be anticipated?

By sensitive supervisors, yes. Watch for an unusual number of grievances from some department; conditions are getting bad or someone is trying to stir up the workers. New union committeemen, too, are a signal for close attention to the department involved.

How to tame wildcats

The three basic areas for work to halt wildcat stoppages are:

1. Employee communications—Be sure the employees know the reasons why your company pursues the policies it does. Use your plant publication to let them know the reasons for changes and be sure people in a department are kept advised of such small things as the reason for moving a machine.

Stop misunderstandings, and you make it tougher for the would-be union leader to find excuses for a strike to give the workers.

2. Attention to grievances—Be sure your employees' grievances are handled quickly and fairly. Let them know the reason for any delay, and insure that the umpire does an impartial job that will avoid any taint of favoritism.

Quick, understandable justice through the regular grievance procedure makes strikes harder to justify to the majority by the militant few.

3. Firm and certain discipline—Be sure your employees know the penalty for leaving their work without authorization and that it will be enforced. Let your employees know that you expect them to observe the plant rules and the contract. Never agree to waive your right to discipline in exchange for getting the workers back on the job.

If you have a wildcat

The techniques described above will help to prevent a wildcat by reducing the willingness of the majority to

of the labor agreement to rectify differences of opinion . . .

"We want grievances settled even before they become grievances. We would like to see them all settled in the complaint stage."

Toward that end Mr. McDonald suggested that a committee of union and management officials meet once a month. This meeting would not be a grievance meeting, but rather one "which will enable the company to explain to the union why it is pursuing certain policies and for the union to explain to the company why it, too, is pursuing certain policies."

Steps — Paul Carnahan, president of the National Steel Corp. subsidiary, then pointed out that management at the plant had undergone a program of education on the labor contract to minimize the troubles that arise from mistakes and misunderstandings. A new program is being initiated on how to get along with people, a move to smooth the supervisor-employee relationship still further. "We want our management to be fair, to be friendly and considerate of others in all respects," said Mr. Carnahan.

He endorsed Mr. McDonald's suggestion of a union-management committee and pointed out to workers that when an illegal work stoppage occurs, it does a great injustice to others who are thrown out of employment and to the company. "It also damages collective bargaining generally, because the object of the contract is to eliminate such occurrences," observed Mr. Carnahan.

Hard-bitten Great Lakes Steel workers, interviewed after the meeting, said: "It sounds good, but we'll wait and see."

Pointers—You won't find many who will argue with these steps at Great Lakes to tame the wildcat: Management is trained to know the contract and to interpret it uniformly; management is being trained to handle workers with tact and sympathy; through the labor-management committee management and union will have increased insight into why policies for better understanding are being pursued; and the union and company president have expressed respect for the contract and a desire for fair play.

But there are those who argue that however fine communications are, one thing is better—discipline.

Counterpart — One spokesman for a metalworking firm likens the labor-management interplay to the international situation: "The Russians listen to our UN delegates and communicate with our diplomats, but they stay put because of our Armed Forces."

listen to agitators. When a wildcat occurs, it should be handled as any law violation or breach of faith, fairly but firmly.

Remember that you can be subject to charges of unfair labor practice. Workers must not have a legitimate reason for leaving, such as illness, dangerous working conditions, etc. For that reason, your front-line supervisor becomes vital in obtaining data that will justify your action.

Instructions to supervisors

Promptly report any rumors of a strike or stoppage to higher supervision and the labor relations department.

When a strike or stoppage occurs:

1. Notify higher supervision and the labor relations department. Phone if possible; otherwise, use a messenger.

2. Have the committeeman on hand assist you in keeping people on their jobs.

a. Tell him directly and clearly what he is to do.

b. Be alert as to what he says and how he says it to workers.

c. If he is indifferent or unwilling to assume his responsibility, he can be charged with negative leadership or dereliction of duty.

3. Observe, remember and record significant happenings.

4. Do not leave the scene.

5. Get employees back by giving positive instructions: "You are in violation of paragraph 117 of the contract. Go back to work. Any problems you have can be handled through the grievance procedure after you go back to work."

6. Do not tell employees to go home. Do not say: "Go back to work or go home"; keep instructing employees: "Go back to work."

7. Do not argue merits of situation; stick to but one proposition: "Go back to work, and we will handle the problem through the grievance procedure."

8. Identify leader by determining who is .

a. Orally spreading information on a contemplated strike or stoppage.

b. Leaving department to obtain information on strike or stoppage in another area of the plant.

c. Waving or calling others off the job.

d. Shutting down machines or equipment.

e. Spreading a feeling of antagonism among employees over management's position on the issue in question.

f. Acting as spokesman.

g. Picketing or directing pickets. Showing negative leadership—union representatives standing by idly.

The following is the policy in regard to passes out of the plant should a work stoppage occur in your area or department:

1. Many employees may walk out without passes. They should be permitted to do so.

2. If passes are requested, they must carry a definite reason like: "Participating in a strike." "Refused to work." The time is important; record it.

3. Employees remaining and who are sent out because of lack of work, etc., should be given passes and the reason, such as: "Shortage of material due to a strike."

The supervisor becomes your primary witness to the violation. His actions are vital in sustaining your position in action against the workers taking the illegal action.

That's discipline, understood by ll workers and expected as the nevitable consequence of contract r plant rule violation. It's impor-ant, too, he feels, to recognize nat the union is fundamentally a olitical organization whose lead-rs must maintain their popular-y with the rank and file to be e-elected.

Help—But while that puts the urden for discipline squarely on anagement's shoulders, look for nion co-operation if your case is ound. Take the situation at a teel firm right after the war:

Largely through failure of a ajority of the workers to vote, local union president was elected ho was determined to make a ame for himself. His active earch for grievances turned up ich petty gripes as drinking ountains being too low, water in e fountains being too warm, food facilities lacking certain little-in-demand items, etc. On the strength of these gripes a tranquil labor situation erupted into a parade of wildcats. As fast as one grievance could be disposed of, two or three others were found to take its place.

When the company presented the facts to the union's national headquarters, the union agreed and quickly stepped in to place the local under an administratorship until a new election could be held.

Politics—Union political maneuvering is behind the majority of wildcat strikes. Example: At Studebaker (South Bend, Ind.) local officers originally agreed with the company to a revision in the incentive system. But the revision created a political issue which the "outs" were able to exploit in getting into power. Even at the department level a new committeeman is likely to start looking for gripes which will make him a name as a potential labor leader.

Most unions recognize that these men injure the majority of the workers by their selfish attempts to gain stature. For that reason when their efforts to prove their strength are met with severe discipline, the union leaders can then say: "See what happens when you listen to those bums? Now listen to us."

Requirement — That means a firm policy is needed in dealing with wildcat strike leaders, one with which they are familiar and which they can expect to be enforced. Leadership of a wildcat strike is viewed by many large firms as the most serious offense with which a worker can be charged, and the penalty is discharge.

That's why U. S. Steel Corp.

refused to back down on disciplinary action in its recent wildcat at the McDonald Works. It and other companies insist on handling the grievance through the normal grievance procedure and refuse to discuss reinstatement or the grievance until the workers return to the job.

Initial Cost — For that reason you must be prepared to take a loss of production to get the policy of inflexible discipline established. Alternatives: Contract observation or mob rule. The longer wildcatters have their own way, the more difficult and costly the establishment of discipline becomes. It will take a substantial period of experience to convince the workers that striking will only delay resolution of the grievance and cost them money. One firm at various times laid off over 500 workers to establish this principle. After a policy is established, however, most workers express favorable attitudes toward discipline. That's because the majority doesn't take an active part in union affairs, doesn't vote and doesn't go to meetings. They only want to work and resent wildcats but comply to avoid threatened retaliation.

Knowledge that as few as five or ten workers can no longer shut down the plant and throw 10,000 out of work gives the 10,000 an added sense of security. The rank and file recognize that they have as much to gain from a good program of discipline as management, and they are quick to see its benefits.

Keys — Employee-management respect and understanding of the rules, fair and prompt handling of grievances, plus understood and certain discipline for violation of plant rules or the contract are the keys to ending wildcat stoppages. Firmness but fairness must keynote the labor-management relationship, and the onus for establishing such a relationship is on management.

Although the union is a political organization, the political maneuvering takes place on issues created by management default.

• *Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department,* STEEL, *Penton Bldg., Cleveland 13, O.*

Stainless, Ahoy

Steamship firm turns to stainless to reduce replacement costs of critical ship components

ISTHMIAN STEAMSHIP Co., is waging a "sea battle" against corrosion. It is using stainless steel in critical spots like large vent cowls, electrical gear housings, baffle plates in evaporators, drain tanks and small connections to the ship's hull.

Company engineers discovered that most items for its fleet can be fabricated out of stainless at a cost comparable to previous steels used by taking advantage of the greater strength-to-weight ratio of stainless. Thinner sheets can be used.

Examples of Savings — Boxes covering the cargo winch and anchor windlass brake boxes (housing vital electrical gear) had been pitting. Replacement was necessary on an average of every four years.

A replacement program was started using stainless steel boxes. Company officials, who estimate that $48,000 was being spent annually for replacement units, feel that this cost has been eliminated. Stainless units are showing no signs of corrosion.

By fabricating plates and baffles and the separator in the salt water evaporators out of stainless, an annual replacement cost of $14,000 has been wiped out.

Large vent cowls (above deck) always have posed a problem. Interiors are not accessible; without maintenance, cowls, which are expensive to replace, fail rapidly. Stainless units should last the life of the ship, Isthmian engineers predict.

Ore Addition for Kaiser

Kaiser Steel Corp. reports a multimillion-dollar addition to its iron ore mining facilities at Eagle Mountain, Calif.

Jack L. Ashby, vice president and general manager, says the addition will supplement a beneficiation plant that went into operation last year.

The facilities are expected to raise the shipping grade of Kaiser's ore to over 60 per cent iron content. Iron ore from the Eagle Mountain mine goes to Kaiser's steel mill at Fontana, Calif.

Pittsburgh Boosts Capacity

Pittsburgh Steel Co. has announced a $15 million-improvement program aimed at boosting basic ingot capacity 15 per cent (180,000 tons).

The project, centered at the Monessen (Pa.) Works, calls for 19 Koppers-Becker coke ovens which will add 25 per cent to Monessen's coke-making capacity, raising the total to 624,000 tons annually.

Three of the four stoves of Blast Furnace No. 1 will be changed into two-pass stoves. A Kinney gas-washer will be installed in No. 1 furnace. Open-hearth furnaces will be improved under a three-phase program.

The company also plans to diversify the range of welded wire fabrics to meet wider trade demands.

The program will be completed at intervals, starting May 1, 1956, and ending Mar. 1, 1957.

CAA Sees Big Gains by 1965

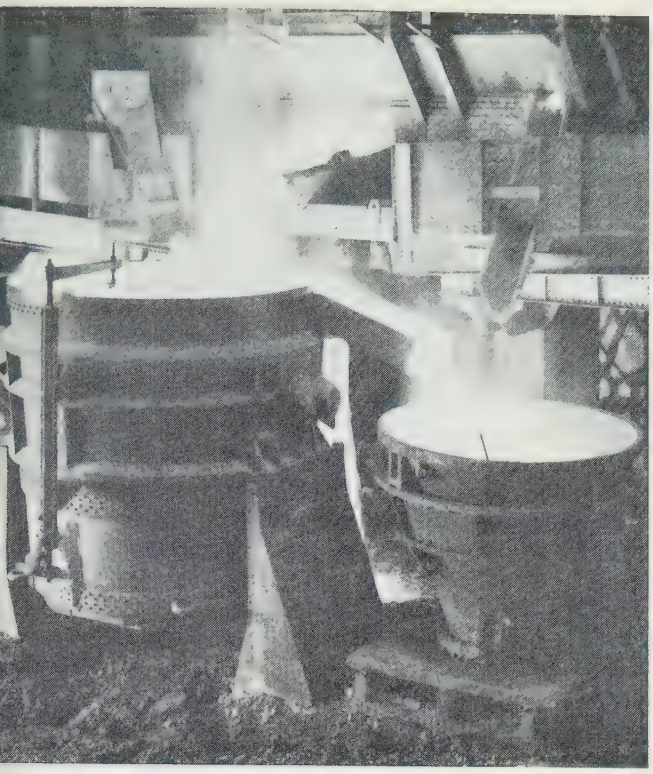
All facets of aviation figure to share in the continued expansion of the national economy. More people (via a growing population) are expected to spend more of their income on air travel. So predicts the Civil Aeronautics Administration.

By 1965, CAA expects 70 million passengers, more than double the 32.3 million in 1954. Air transport's share of the common carrier market will rise from its current 29 per cent to over 50 per cent.

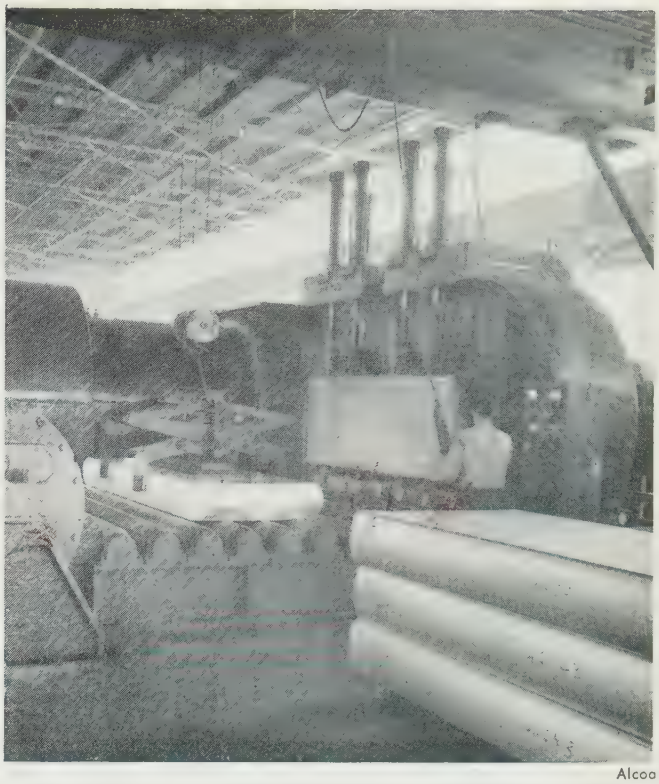
The international and overseas passenger total for U. S. airlines will hit 6 million in 1965, up from 2.8 million in 1954.

The CAA sees a more promising outlook for air cargo. The forecast is an annual increase of slightly over 10 per cent a year. By 1965, 800 million ton-miles are expected.

To carry the traffic, CAA expects aircraft manufacturers will deliver 400 large civil transports in 1965.



Inland Steel Co.



Alcoa

ODM clamps down on granting tax amortization, but there's . . .

No Damper on Steel, Aluminum Expansion

FUTURE steel and aluminum expansion won't be hit seriously by Washington's move to curtail tax incentives.

The Office of Defense Mobilization, after consulting with the Defense Mobilization Board, has just closed expansion goals for primary aluminum as well as most of the basic iron and steel industry. That means future expansions in those areas won't qualify for five-year tax amortization. In steel, only heavy plate expansion will be considered for tax write-offs.

Steel—ODM's expansion goal for iron and steel (124.3 million ingot tons) has been exceeded by some 5 million ingot tons, reports ODM Director Arthur S. Flemming, when taking into account expansion under way and the amount which is in the final planning stage. This puts the door, at least temporarily, on 66 requests for certificates of necessity (totaling $1.1 billion) which iron and steel firms have on file with ODM (for more on steel expansion see STEEL, Sept. 5, p. 71).

Aluminum—The primary aluminum goal for mobilization purposes is 1.7 million tons. Capacity in place, under construction and planned (see STEEL, Sept. 26, p. 69) brings the total to some 1.8 million tons, says ODM.

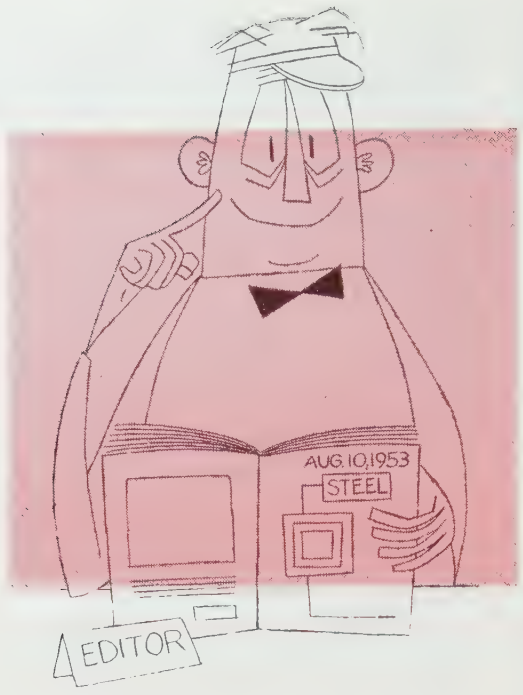
Of the anticipated capacity, 1.5 million tons is in place and Aluminum Co. of America has 65,000 tons under construction. Planned primary expansion calls for Harvey Machine Co. to build 54,000 tons of new capacity; Olin-Mathieson Chemical Corp., 60,000 tons; and Alcoa, 66,000 tons. Certificates of necessity, permitting rapid tax amortization, have been granted to Harvey and Olin-Mathieson and are still in effect. The Alcoa future expansion was planned without fast tax amortization.

Reaction—Republic Steel Corp.'s position is typical of the steel industry. It has applied for tax write-offs—and will continue to do so—just in case ODM switches its position (it has been known to do so). If it does not get certificates of necessity, Republic Steel says it still "will be able to cope with the problem." National Steel Corp. reports that it will continue with its expansion plans, regardless of the government's stand.

Meanwhile — Kaiser Aluminum & Chemical Corp. is still considering four projects totaling $104 million. It says the government's action does not mean that Kaiser's plans to increase primary aluminum capacity will be affected. Because Alcoa has already gone ahead on expansion plans without government incentives, it expresses no concern at the government's latest move. Reynolds Metals Co. is basing its expansion on "future markets," not federal amortization.

The only firm in the aluminum group to be seriously affected may be St. Joseph Lead Co. It is planning (with help from Pittsburgh Consolidation Coal Co.) to build a $85-million primary aluminum plant.

Andrew Fletcher, St. Joe's president, has stated that the government's policy toward increasing aluminum production would be an important factor in the final decision.



Reviewing a Forecast

DO ECONOMIC forecasts work out?

STEEL has re-examined a prediction (published Aug. 10, 1953, p. 57), which went out on the limb to estimate the trend in screw machine product shipments through August - November, 1955 — a 28-month forecast.

Batting Average — Some of the predictions: A recession in 1954 (it came); with 1940 equaling 100, an average index of monthly shipments at 350 for the period (the actual average was 369); a low index for the period of 280 (it was actually 287).

The National Screw Machine Products Association, Cleveland, made the forecast. It has statistics on its industry dating back to 1918. Executive Vice President Orrin B. Werntz has long been studying the cyclical trends revealed by those figures, which showed a peak-and-valley profile. The time between the highs and lows has averaged about 30 months. In making its forecast in the summer of 1953, NSMPA took the reasonably consistent cycles into account.

Accuracy — For a long-term prognostication, the figures are amazingly precise. The prediction falls short, however, in its timing. The low for the period was picked for now. It came 12 months early, in August, 1954.

"The drop for us—and practically everyone else—came unexpectedly fast," comments Mr. Werntz. Fortunately, the association saw the precipitateness in time to advise the industry. Recalls one member: "The whole forecast still had value. We simply advanced the timetable one year." He adds: "By using the predictions in our planning, we have been able to maintain average profits at 8.3 per cent before taxes for the 28 months, despite some rough times."

Significance — Besides showing how business forecasts can be put to work (see STEEL, July 18, p. 93), the NSMPA predictions have even wider interest. Screw machine product output reflects activity for industry generally. Screw parts are used as components by virtually every segment of metalworking.

Is there a prediction for another 28 months? Not yet. "We're going through an on-the-fence period," says Mr. Werntz, "and our industry won't know which way it will jump until about December."

Other economists agree that will take that long to see how 19 auto models will sell, how ne year's construction plans will j and what effects government-a plied brakes will have on the boo

Robbing Peter? — Mr. Wern and others are worried lest son of 1956's potential business stea already has been used for a hig pressure 1955. The origin NSMPA forecast had a long u trend starting now and continuin until early spring of 1957. Tha would be followed by a slum with the next big push upwar coming in the fall of 1959.

That pattern could still tak shape. A long uptrend lastin from August, 1954, to February April, 1957, is not unprecedented The screw products industry ha had one recent upcycle that wa even longer—for 45 months fro July, 1949, to April, 1953. Tha swing, incidentally, closel matched general industry experi ence.

If the upturn continues, NSMPA expects screw product shipment in 1956 to jump 10 per cent ove the $500-million value anticipated for 1955.

NACA Plans Atomic Plane

The government plans to set up a $4.5-million nuclear reactor for development of an atomic airplane.

Sandusky, O., has been picked by the National Advisory Committee for Aeronautics as the site for a research test installation.

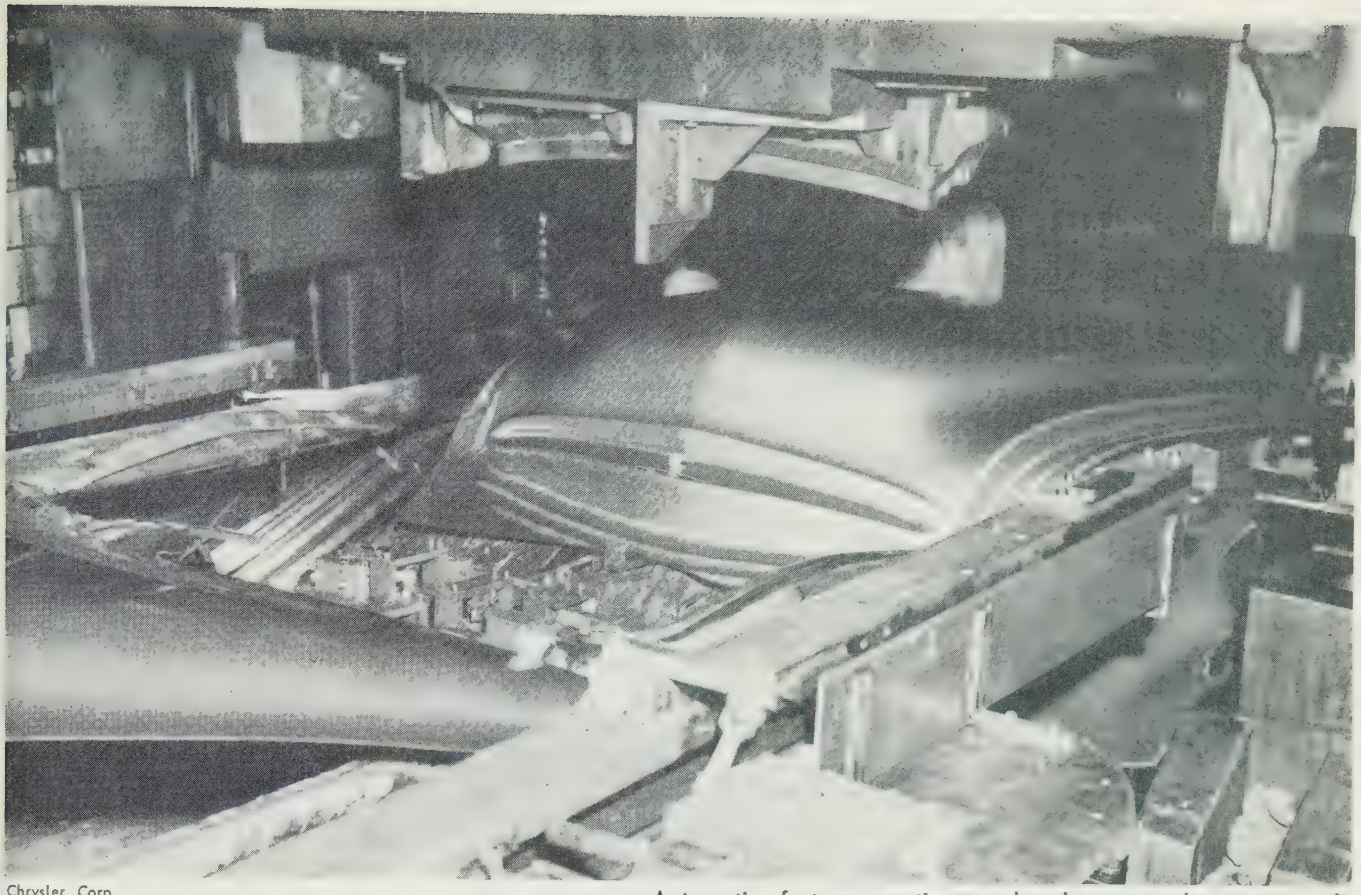
Dr. E. R. Sharp, director of NACA's flight propulsion laboratory, Cleveland, said the reactor will be part of a "sustained attack on technical problems which must be solved before a nuclear-powered aircraft can be flown."

Railroads To Get New Flatcar

An all-welded flatcar (the PS-4) is the newest answer to railroading's needs for a rugged, general-purpose carrier.

Fourth in a series of low-cost, mass-produced freight cars, the PS-4 can be adapted for bulkheads or piggyback hauling.

Pullman-Standard Car Mfg. Co. will make the units.



Chrysler Corp.

Automatic, faster operations and a better product are trends

Stampers Pound Out a Good Year

"SHIPMENTS of stampings may jump 25 per cent in the next 90 days." So says H. A. Daschner, Pressed Metal Institute, Cleveland. Reasons: New car production will get rolling. Appliances, housewares, sporting goods and toys look for a Christmas boom.

Jobbing stampers didn't begin to top their 1954 rate of production until June and July. But orders have been well over 1954 levels. Backlogs average 13 weeks.

The Leaders—Some aggressive promotion-minded stampers report 1955 first half sales are 32 to 66 per cent over the first six months of 1954. C. C. Caditz, president of Northern Metal Products Co., Franklin, Ill., says: "Sales in the first half were up 30 to 40 per cent for us, and in the second half, we expect to do as well, perhaps a little better."

Shipments this year will be about 10 to 15 per cent better than last year's. Next year should be as good or better than this one.

A Pinch—Steel shipments from the mills are tight; some purchases have had to be made from warehouses. Brass supplies are another cause for concern. Use of aluminum has increased by one-third to one-half in the last three years.

Increased material costs have brought on price boosts averaging 5 to 6 per cent. Labor increases have forced some prices even higher.

The nation's 2400 jobbing stampers are busy; employees work an average of 42 hours a week. About 5 per cent of the stampers are working double shifts. But, they say, profits are less than adequate. The enormous capacity of the industry sharpens competition and squeezes profits.

New Business—Increased use of stampings in automobiles makes the stampers happy. Industrial wheels, lighting fixtures, clocks, telephones and toys are other big users.

Atom Industries Hold Meeting

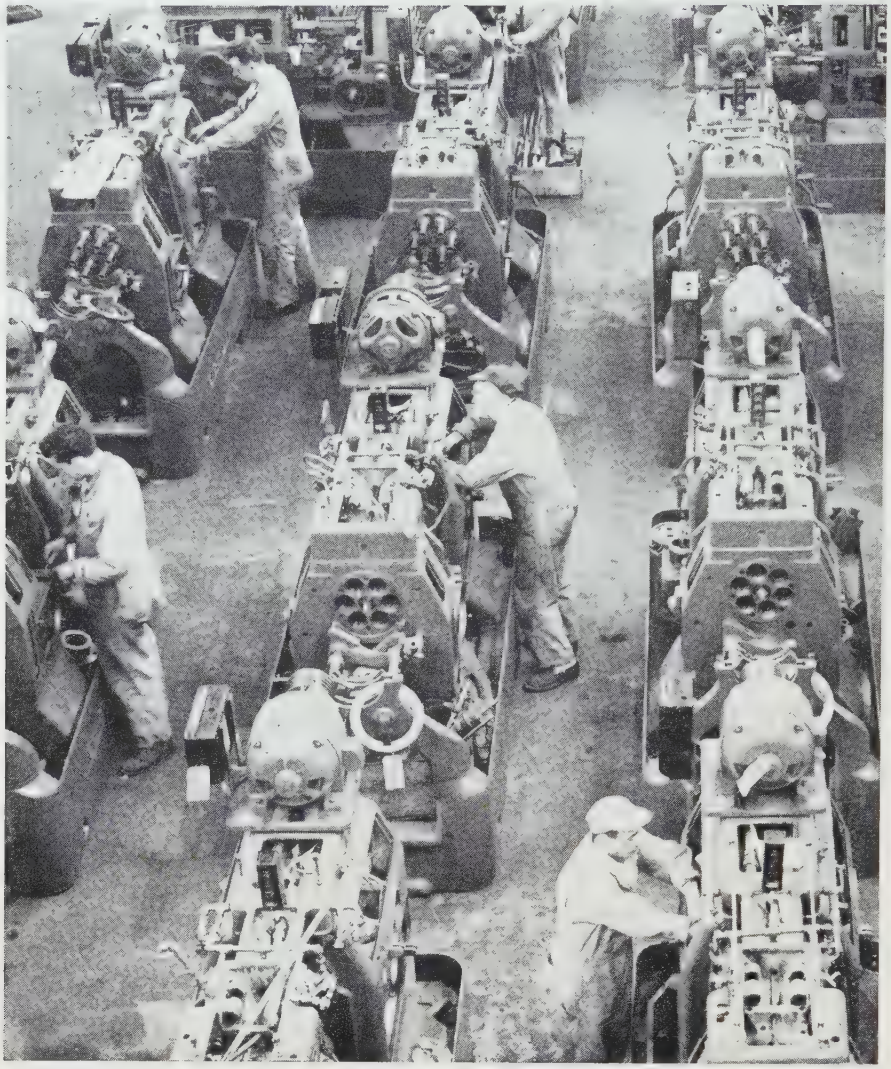
The first U. S. atomic industry trade fair was held in Washington last week.

Most of the 74 exhibiting firms were not in existence a few years ago.

A simultaneous meeting of the Atomic Industrial Forum Inc. discussed business opportunities. Indications are that atomic industry growth may closely parallel the history of automobile expansion.

Francis K. McCune, GE's atomic products division vice president and general manager said in a forum address that industrial sales prospects are being stymied by too much government secrecy and too little leeway in nuclear fuel exports.

By E. C. KREUTZBERG *Washington Editor*



Simmons Machine Tool Corp.

A survey points the way to new purchases as . . .

Navy Tools Grow Old

SATISFIED with the results obtained from an introductory survey on machine tool obsolescence, the Navy's Bureau of Ships is "looking" at the rest of its tools.

In explaining the new yardstick which will be used for formulating procurement plans for fiscal 1957, Alfred J. Weisbecker, Navy commander, states: "We propose to capitalize on the outstanding advances made in machine tool design since World War II."

Crux—The commander explained to STEEL that the initial survey (completed in July) reveals that the majority of its machine tools —in the 11 Navy shipyards and the San Diego ship repair facility —are 11 years old. This means they predate the "carbide age" and are below the present standard for machine tool performance and practices.

Statistics from the initial survey show: The 12 Navy facilities could be completely modernized over a five-year period by replacing 3496 obsolete tools with 2474 new machine tools of latest design. Based on the operation of 2½-shifts under mobilization, these new tools would save 3099 man-years annually. Floor space saved would be about 76,430 sq ft. Overall savings would enable the bureau to recover its invested capital within five years (under mobilization conditions).

Other Uses?—The obsolescence formula, a joint effort by the Bureau of Ships and the Machinery & Allied Products Institute, is being studied by the three armed services to see if the same type formula can be used with production equipment.

More Taconite Coming?

The United States Bureau of Mines has launched a research program to develop a commercial process for concentrating the nonmagnetic taconite ores of the Lake Superior region. Up to this time, emphasis has been placed on magnetic-type taconite which comprises only a fraction of the taconite reserves. The bureau estimates that this area contains some 60 billion tons of nonmagnetic taconite but has only 5 billion tons of the magnetic type.

Nickel Shortage Hurts

As high grade nickel is essential for the production of electron tubes and electronic equipment, industry spokesmen are warning the Business & Defense Services Administration that the continuing shortage of nickel may force electronic manufacturers to curtail production. BDSA's reply: There is little hope for improvement at this time.

Here and There

Field offices of BDSA report that a preliminary survey indicates that flood damage will cost the Northeastern states some $156.8 million. Connecticut was hit the hardest ($72.5 million) . . . The Office of Defense Mobilization has authorized the Defense and Commerce departments to begin rental charges 90 days after the delivery of machine tools and equipment to flood victims. Reason: This will assure that the rented equipment is in operation.

Ken Piper Says: "Study Each Worker"

"YOU DEAL with employees as individuals rather than as a group. To me that's the basic difference between industrial relations and human relations," says Kenneth Piper, director of human relations at Motorola Inc., Chicago.

For Motorola, consideration of the employee as an individual is paying big dividends: It never has had a major labor problem.

"In all our programs," Mr. Piper emphasizes, "we attempt to provide the element of individual decision. This supplies the basic recognition an employee needs."

Two Examples—In the company's profit sharing program, no changes can be made without the approval (by vote) of the employees. In the executive development program, the individual plans his own course of studies and interests. Then he sits down with management officials to discuss his outline and get suggestions. But the basic program is developed by the individual and is never a prepared plan which the employee must follow.

Many industrial relations departments, Mr. Piper believes, are too wrapped up in what they're doing today and should have done yesterday—labor relations then become a contest between management and the union.

Brain Storming—Successful human relations, he points out, takes a great deal of creativeness. First, management must be sure that its attitudes are such that they can be lived with, without sacrificing basic control and discipline. Then management must study what drives and motivates employees to get results. Crux: You have to anticipate problems far enough ahead so that solutions are ready.

"We developed our profit sharing program in 1948 because it was obvious that the Christmas bonus meant little to the employee a month after he received it. But today's $25 million in the profit-sharing fund is important to every employee—it's not company money, it's theirs."

Ken Piper's career didn't begin in employee relations. After attending UCLA and Loyola Law School, he became an agent for the Federal Bureau of Investigation. He worked in several field offices and wound up in Washington as director of personnel. In 1943 he left the FBI to be director of industrial relations at Bausch & Lomb Optical Co. He joined Motorola in 1948.

For diversion, he likes sports. How's his golf? "Well," he smiles, "maybe if human relations weren't such a big, full-time job, I'd be shooting in the 70s instead of the 80s."

Union Metal Mfg. Co.

With sales at $10 million, traffic signal makers say . . .

Green Means Go!

TRAFFIC SIGNAL manufacturers don't see any red lights ahead.

Their sales have hurdled from $4-to-$5 million level in 1946 to an estimated $10 million this year. The industry expects to hit the $20-million mark by 1965.

Expenditures—The Institute of Traffic Engineers, New Haven, Conn., reports that 34 states spent $6.9 million of their highway budgets on traffic signals in 1954. This breaks down to about 114,000 signalized intersections, 100,000 installed by cities and 14,000 by state highway departments.

Installation cost of a single unit runs about $1200. Putting signals on all approaches to an intersection can mount the cost up to $7000 or $8000.

Manufacturers — Six companies make most of the signals. There are perhaps ten more that manufacture signal equipment in addition to their regular lines. These companies also make directional markers, railroad crossing signals and inplant signal lights used by companies to control traffic in their industrial areas.

Components—Each traffic signal has at least two parts: The signal head and a control mechanism. Heads and control boxes are generally aluminum.

Some signals also have "detector" units which actuate controls. Steel or aluminum mounting poles and brackets usually are not considered part of the signal but part of installation costs.

How They Work — Fixed-time and traffic-actuated signals are the two basic types.

Fixed-time signals are nothing more than time clocks. They can be adjusted manually, but their operational cycle, once set, does not vary. Traffic engineers say that fixed-time lights still are useful at minor crossings and rural intersections, but most of them will be replaced by traffic-actuated signals.

Go, Go, Go—Actuated signals operate on traffic demand. Detectors "count" or record the number of vehicles coming from a certain direction. When the demand reaches a peak, controls change the light.

Electronic, sound sensitive, photoelectric and magnetic detectors are being used as control actuators. Pressure-sensitive treadle detectors are most popular—the same devices open supermarket doors automatically. Each uses as much as 200 to 300 lb of steel in its construction.

In some cases main routes stay green until side street traffic demands the "go" sign. Pedestrian traffic usually is included in the cycle. At some corners pedestrians get the right of way by pushing a control button mounted on a street corner bracket.

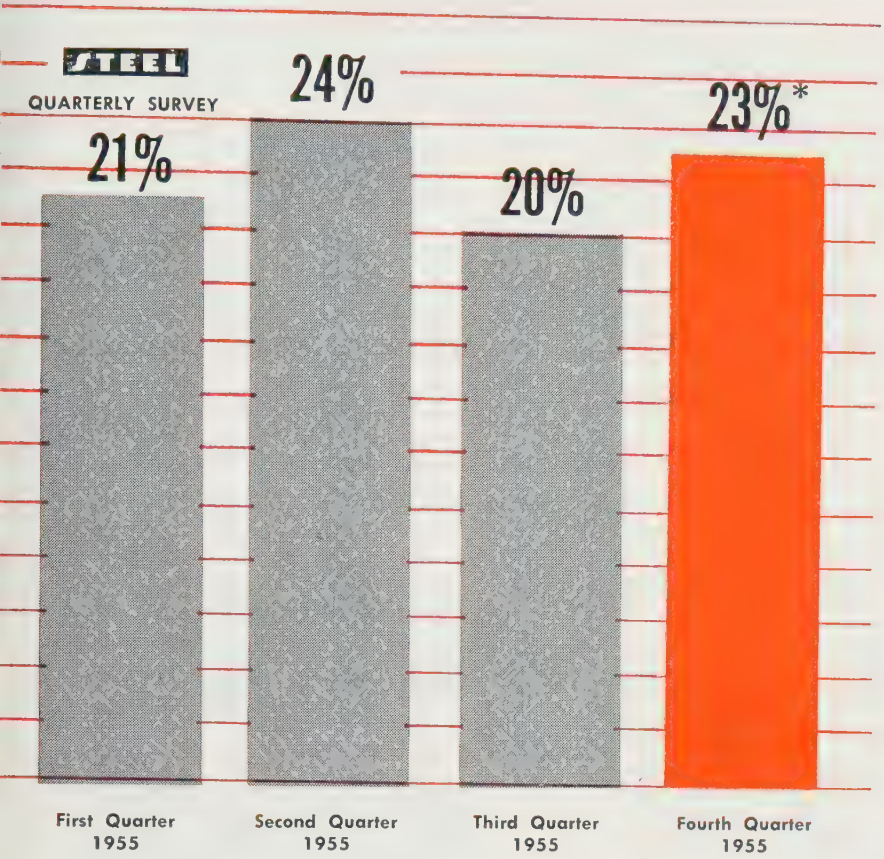
New Wrinkles—More and more traffic signals are being set up to operate on a system basis. Individual light controls are on the way out. Flexible synchronized controls are being installed to meet hourly changes in traffic over a wide area.

Radio - controlled pre - emption units are being placed on police cars and ambulances. These units automatically give emergency vehicles the right of way by turning crosslights to red.

Light in the Sky — Although some traffic experts say there are too many lights in the wrong places, traffic signal makers feel that increased highway expansion, automobile production and public demand for safety have given them the green light.

Major Industrial Components

(% of respondents who added to inventories)



urvey includes: Bearings, castings, hose couplings, cylinders, electrical equipment, fasteners, forgings, gears, mechanical rubber goods, screw machine products, springs and wire shapes, stampings and weldments

Respondents' estimates

Supplies Improve Slightly

INDUSTRIAL COMPONENTS will be a little easier to come by in the fourth quarter. That's the indication of STEEL's regular quarterly survey of the inventory and delivery situation.

Reinforcing that conclusion: Half the respondents feel they'll be better off inventorywise three months from now. In the two preceding surveys, only one in three viewed the coming quarter so optimistically.

Output—That the inventory improvement won't be because of a slowdown in production is pointed to by 80 per cent of the respondents. Those users will maintain inventories at or above present levels or will involuntarily have lower stocks because they can't get wanted items—it's still a long way from a buyers' market.

Spotty and sometimes serious shortages are likely in some components. Witness: Three-fourths of the respondents report difficulty getting one or more components, 5 per cent more than last quarter.

Too Low—Also, the number of firms expecting to be in a worse position in three months doubled for the second straight quarter. In the latest survey, those saying they'll be worse off (almost 10 per cent) report it's because stocks are too low.

Much of the difficulty in components can be tied right back to hard-to-get steel, copper and aluminum. "Deliveries will probably get worse because of the shortages of copper and steel," says one executive. Others point out the same situation and add aluminum.

Difficulty—Complicating the situation is this problem: "Deliveries are generally adequate if the supplier is given normal lead time. The trouble is our customers are expecting us to give them deliveries on our products on short notice."

Components giving the most trouble on deliveries are antifriction bearings, malleable iron and steel castings, forgings, air and hydraulic cylinders and many kinds of electrical equipment. One-fifth to one-fourth of the users of those products aren't satisfied with supplier performance. On most other components, less than 10 per cent of users complained.

How much trouble you have depends pretty much on what you buy. Fabricators who buy parts as they are needed to fill a customer's order are probably having the toughest time. One manufacturer says: "Deliveries generally are extending, causing difficulty in procuring material which is purchased directly for customer orders."

Hot Spots—On the other hand, a freight car builder (most of this industry traditionally buys only to fill a specific contract) reports: "On car contracts received in late August and thereafter, we will have great difficulty with steel mill products but not with other components."

Increase — A reason for many firms feeling in fairly good shape is the small but welcome inventory build-up that came over the summer. But it's still not so big as PAs had hoped for. A quarter ago, plans of 25 per cent of the respondents called for larger stocks; only 20 per cent managed to get them.

Brightening that inventory picture: For the first time since deliveries tightened about six months ago, there was a significant movement out of the "less than ten-day supply" category.

On most items the bulk of respondents indicate a 10-to-60-day inventory. There was some movement into the 60-to-90-day group, but a good share of that came from a reduction in stocks by holders who three months ago were in the three-to-six-month category.

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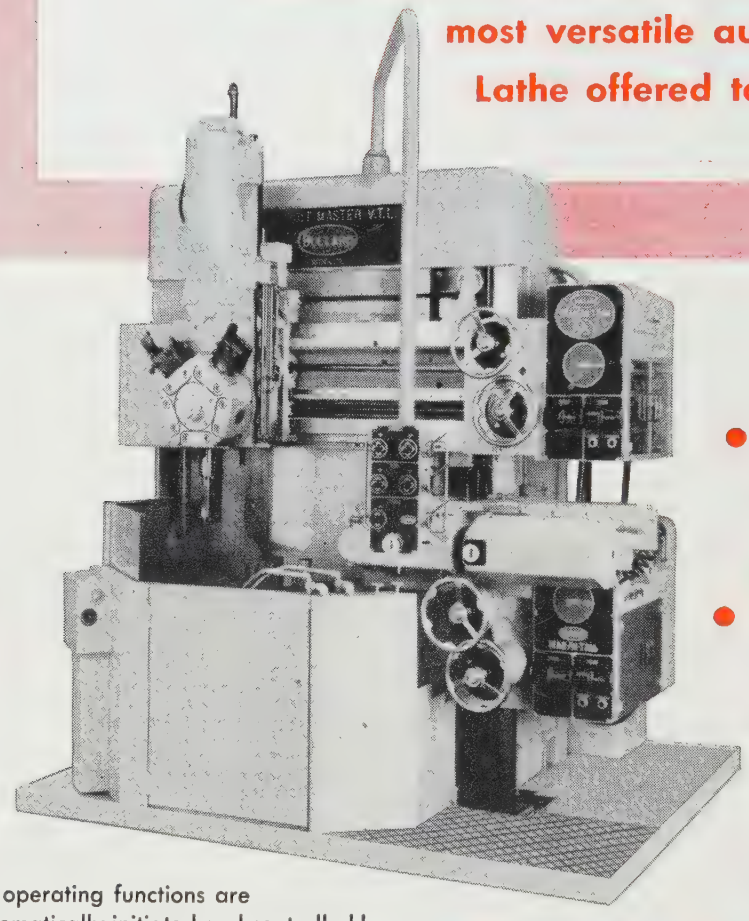

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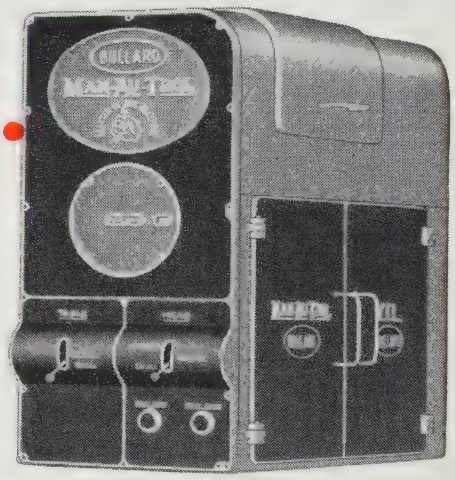

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Auto Facts Hit the Roads

Statistics show: If anything curtails motordom's long-term growth, it will be inadequate highways, not bad times or a drop in population

HIGHWAY TRAFFIC in the U. S. will double in the next 30 years, says Stephen M. Du Brul of General Motors Corp.'s business research staff. If that doesn't make you feel like taking flying lessons, Mr. Du Brul has a clincher: If adequate highways are provided, highway traffic may well triple.

No Road?—The difference between doubling and tripling could amount to a fairly hefty piece of change for the automakers. With values of vehicles produced at $10 billion in 1950, $11 billion in 1953 and a possible record of over $13 billion in traffic jammers for 1955, the automakers have their production foot to the floorboards, as the specter of literally running out of road begins to loom ahead.

Like any motorist in the same situation, the automakers are beginning to feel a bit uneasy. Unlike most motorists, however, rather than hitting the brakes, they're moving ahead with long-range expansion plans and calling for more roads. And there's excellent evidence that more roads are needed. While highway travel has increased five-fold since 1920, our highway construction program hasn't increased nearly so much.

Another Picture—That stands in marked contrast to other factors influencing the auto market. For example, the number of families above the $3000-per-year income level has increased 73 per cent during the last 14 years alone. By this same measure, seven out of ten families today top that figure and over half exceed $4300 yearly.

At the same time, the population of the U. S. has been increasing. The net result is that where there are now 5 million fewer families in the income range below $3000 than before the war, there are 15 million more families with incomes above $3000. This incredible increase is a major factor behind the current record-breaking level of automobile sales and the trend is continuing.

Basis—Mr. Du Brul believes that the typical family income should exceed $8000 after taxes in 25 or 30 years, measured in terms of today's dollars, compared with $4300 now. These factors, plus increased leisure time for travel and recreation, will have a profound effect upon the nation's future highway needs and lead to Mr. Du Brul's estimates.

If you hadn't discovered it already, there's a sufficiency of auto traffic for most drivers. Today, there are 61 million registered motor vehicles and 72 million licensed drivers in the U. S. piling up mileage at the unprecedented rate of more than 560 billion miles a year. That's about 9200 miles per vehicle and 7800 miles per driver, just in case you'd like to know how your contribution stacks up.

Decade Ahead—Just looking ten years ahead, motor vehicle registrations and travel mileage on the nation's highways are due to increase more than 33 per cent. To correct highway inadequacies during that period alone, the Auto Manufacturers Association estimates that $101 billion is needed. The organization estimates that inadequate roads today are costing U. S. motorists more than $5 billion per year, about half the amount needed annually. That estimate is based on traffic accidents, commercial vehicle time loss, losses in gasoline mileage, brakes and tire economy and vehicle operating costs on unimproved roads scheduled for surfacing. When to that is added the fact that 24 cents out of every dollar spent for the purchase of an automobile goes into taxes, it's the more remarkable that the highway program is dragging.

Despite all that, 70 per cent of the world's passenger car production is in the U. S. Of world passenger car registrations, 73 per cent are in this country. About 71 per cent of the nation's families own at least one automobile and 12 per cent of car-owning families own two or more cars. Two out of every three passenger cars produced and three out of every four trucks produced in 1954 were sold as replacements for vehicles scrapped. That means one out of every three passenger cars produced is an addition on the highways. Despite the economic climate forecast over the years ahead, inadequate highways could begin to choke off the flow.

Reason Why—That's for the not-too-mysterious reason that as traffic increases, the utility of the passenger car diminishes accordingly. There's nothing quite so worthless as an auto in a mile-long traffic jam or a car without a parking space. Improvements in other sources of transportation could begin to curtail demand for autos. In a real sense, the success of the

Automotive Retailer Sales: $43 Billion in 1954

(millions of dollars)

	Motor Vehicle and Other Automotive Dealers	Tire, Battery and Accessory Dealers	Gasoline Service Stations	Total
1954	$29,961	$1,705	$11,445	$43,111
1953	31,499	1,820	10,537	43,856
1952	26,393	1,944	9,976	38,313
1951	26,282	1,874	9,151	37,307

automakers could prove their undoing as the increasing hordes of autos diminish their own utility on overcrowded streets.

The nation's 701,326 automotive firms that sold a record $43.8 billion in cars, accessories, gasoline, etc., in 1953 can comfortably expect to see that figure bettered in 1955. It could well be doubled in 25 years. And keynoting the growth for new businesses is the fact that 20.4 per cent of all patents issued in 1954 were automotive devices.

Roads ahead mean a great deal, not only to the motorist facing daily traffic but also to the auto industry and the economy.

Exhaust Notes

Although Buick will introduce a newly designed rear end for 1956 to handle increased engine output, watch for this GM division to become the first American car manufacturer to introduce an independent rear suspension. Used on European cars like the Porsche, Mercedes and Lancia, this unit reduces unsprung weight, improving both ride and roadholding characteristics. Buick will use this unit in preference to the hydraulic-pneumatic suspension similar to that of the Citroen which will bow on other of the GM makes in 1957.

Studebaker is readying an answer to the Thunderbird, Corvette and Chrysler 300. The Studebaker Speedster for 1956 will have a Packard engine rated at 285 hp or better, and, with the car's low frontal area and clean design, should top 130 actual miles per hour. Installation under the hood is about the tightest ever accomplished, and the car probably won't handle without some reworking with the Packard engine mass in the front end. But when it comes to drags, the Speedster ought to be the 1956 champion . . . probably in the top speed department as well.

As reported some months ago, all makes are presently readying four-door hardtops. With GM getting the drop in its B-bodied series (to be available this year in all three, A, B, and C), other makes are unable to introduce until about January. But don't give up, they'll all have it among the Big Three by early next year.

Chrysler Corp., incidentally, is readying a sports car to be coming along in mid-1956. It probably will be designated the Falcon and be the property of Dodge Division. A good news note for sports car enthusiasts: Those in the know say this car was conceived with competition on the race course, not the salesroom, in mind.

Thunderbirds, incidentally, not to be announced until late this year for 1956, will have 225 hp. Styling facelifts include new porthole windows in the rear quarter area of the hard top to improve visibility. A new Corvette in both the convertible and fast back models is reported coming in 1956 and should really boost interest in the machines. Windup windows are reported to be a feature of the cars, along with an adaption of the ball-joint suspension on passenger cars to get handling into the competition class.

On the subject of competition, Mauri Rose is reported in charge of Chevrolet competitive activity at "stock car races all over the country." Ford is in the process of setting up a racing department as well. Chrysler, now forming a "Chrysler 300 Owner's Club," won't be far behind as the auto makers get the message that racing victories sell cars. That's because, believe it or not, auto races of various sorts draw more spectators than any other sport in these United States.

Somewhat along the same lines, prizes to hot rodders competing in the national speed trials of the National Hot Rod Association at Great Bend, Kans., this weekend received engines donated by the automakers as prizes. Safety is getting today's headlines, but good old dirt is not forgotten and handling is being discovered.

Watch for limited slip differentials to gain prominence among the automakers. Tests being conducted by Willys with a Detroit product, Hi-Tork, have shown amazing results in improving off-the-road traction. Other automakers are finding marked improvement in roadability and freedom from wheel spin under all conditions. Packard will introduce the device on 1956 models, and other automakers probably will follow by 1957. Costing only about $20 to install, this device will virtually eliminate stuck cars during the northern winters.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,027	672,858
April	936,994	676,269
May	913,257	621,318
June	825,031	635,540
July	815,324	543,344
August	736,039†	523,799
September		364,441
October		312,078
November		616,395
December		761,954
Total		6,896,678

Week Ended	1955	1954
Aug. 27	155,233	113,496
Sept. 3	105,680	110,995
Sept. 10	98,546	84,743
Sept. 17	146,484	74,026
Sept. 24	152,171†	72,804
Oct. 1	160,000*	84,110

Source: *Ward's Automotive Reports*
†Preliminary *Estimated by STEEL

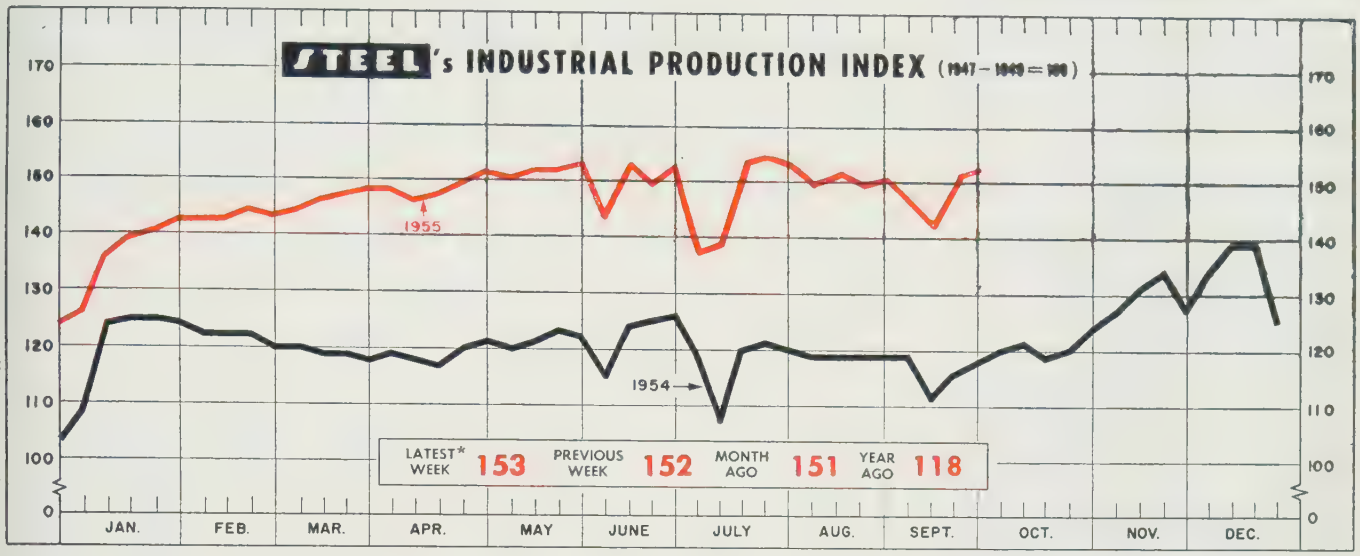
Ford Gets Research Contract

Ford Motor Co. has a one-year government contract to study emergency tank production.

Awarded by the Detroit Ordnance District, the contract's aims are: To determine the number of parts which have been changed on the M-48 medium tank since Ford ceased production in 1953. To find out if previously used production methods and equipment are adaptable to the current model. To study the capacity of present equipment to produce at a stated (confidential) monthly rate.

The contract is one of three being negotiated by Ford with military agencies. Their total: About $3 million. Purpose: Better industrial mobilization planning.

"Operation Readiness" is the voluntary program Ford has developed to handle these contracts. It has two main phases: To determine Ford's resources available for defense production and to match these resources with mobilization assignments.



*Week ended Sept. 24. Based upon and weighted as follows: Steel Output, 35%; Electric Power Output, 32%; Freight Car Loadings, 22%; and Auto Assemblies, 11%

Behind the Boom: Consumer Is Able, Willing

GIVE THE consumer a pat on the back. He's one of the biggest supporters of the current business boom.

Right now he's spending at a record rate, somewhere near $250 billion a year. And it looks like he'll continue at that pace.

Optimism — Witness the forecasts for autos and housing in 1956: Almost as many cars will be sold next year as in this record year; housing is due for a dip, but it will be small—with the accent on small.

Reasons: Employment is high and figures to stay that way, so the consumer feels he's in a good spot to better his way of living.

Pay Gains—He's earning more, too. Factory workers' pay in August set another record. Net spendable weekly earnings were almost $71 for a worker with three dependents, $64 for a worker with no dependents—both categories up about 60 cents from the previous month.

What he's making will buy more. The climb in take-home pay, combined with a small decline in consumer prices, put the purchasing power of his paycheck at a new high—up about 8 per cent from a year ago.

Inflationary Bias—The price situation is important in another way. There is little chance of any major price break—hikes are more in order. So Mr. Consumer sees little value to be gained by putting off purchases in hope of lower price tags.

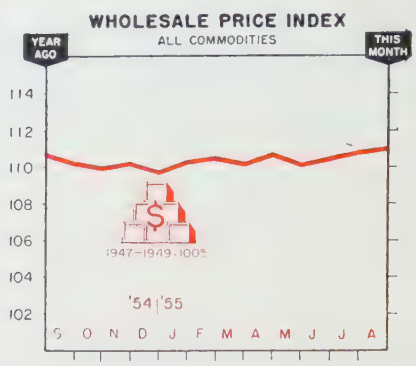
The clouds in the blue sky are these: People are spending more of what they make—94 cents on the dollar now, compared with 92 cents last year and in 1953. That means less of a cushion in a business dip, but, again, confidence is high that there won't be one. Consumer credit and installment debt continue to climb to new peaks. But finance companies report collections are excellent, indicating that consumers aren't going in over their heads. It adds up to

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,316[1]	2,320	1,678
Electric Power Distributed (million kw-hr)	10,620[1]	10,580	9,074
Bitum. Coal Output (1000 tons)	9,975	8,570	8,055
Petroleum Production (daily avg—1000 bbl)	6,680[1]	6,684	6,198
Construction Volume (*ENR*—millions)	$433	$381	$341
Automobile, Truck Output (*Ward's*—units)	152,171[1]	146,484	71,904
TRADE			
Freight Car Loadings (1000 cars)	830[1]	822	711
Business Failures (Dun & Bradstreet, no.)	200[1]	191	195
Currency in Circulation (millions)[3]	$30,401	$30,520	$29,888
Dept. Store Sales (changes from year ago)[3]	+4%	+11%	0%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,682	$19,497	$21,045
Federal Gross Debt (billions)	$277.2	$277.9	$274.7
Bond Volume, NYSE (millions)	$23.0	$29.4	$15.4
Stocks Sales, NYSE (thousands of shares)	12,038	13,102	10,773
Loans and Investments (billions)[4]	$84,735	$84,150	$83,084
U. S. Govt. Obligations Held (billions)[4]	$30,940	$30,791	$35,790
PRICES			
STEEL's Finished Steel Price Index[5]	207.63	207.63	194.19
STEEL's Nonferrous Metal Price Index[6]	263.2	260.1	218.3
All Commodities[7]	111.4	111.4	109.2
Commodities Other than Farm & Foods[7]	117.9	117.9	114.4

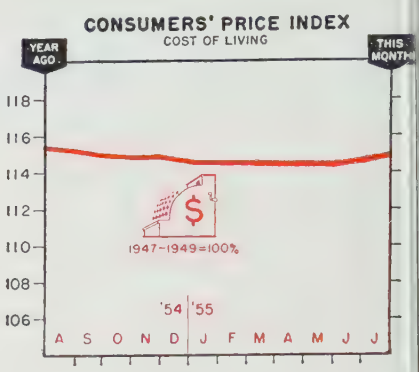
*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100

THE BUSINESS TREND



	1955	1954	1953
Jan.	110.1	110.9	109.9
Feb.	110.4	110.5	109.6
Mar.	110.0	110.5	110.0
Apr.	110.5	111.0	109.4
May	109.9	110.9	109.8
June	110.3	110.0	109.5
July	110.6	110.4	110.9
Aug.	110.5*	110.5	110.6
Sept.	....	110.0	111.0
Oct.	....	109.7	110.2
Nov.	....	110.0	109.8
Dec.	....	109.5	110.1

U. S. Bureau of Labor Statistics
*Preliminary



	1955	1954	1953
Jan.	114.3	115.2	113.9
Feb.	114.3	115.0	113.4
Mar.	114.3	114.8	113.6
Apr.	114.2	114.6	113.7
May	114.2	115.0	114.0
June	114.4	115.1	114.5
July	114.7	115.2	114.7
Aug.	....	115.0	115.0
Sept.	....	114.7	115.2
Oct.	....	114.5	115.4
Nov.	....	114.6	115.0
Dec.	....	114.3	114.9

U. S. Bureau of Labor Statistics

Charts copyrighted, 1955, STEEL

this: As long as the consumer continues to wield the long green, business will stay good.

One of the beneficiaries is the appliance industry. Sales this year will be about 10 per cent higher than 1954's. Chances are 50-50 that 1956 will be equal or better. Availability of credit is one key, but it would have to become extremely tight to cause more than a minor dip. It's not looked for.

Newer appliances lead this year's sales parade: Dishwashers and clothes dryers measure the biggest gains. Gas ranges and water heaters are up 16 and 24 per cent, respectively, over last year. TV may not hit the peaks of a year ago at this time, but the annual total will be up several percentage points.

More Railroad Buying . . .

Railroads, responding to the 1955 pickup in their business, are becoming better metalworking customers. The backlog of freight cars on order is 52,803, four times what it was a year ago, up 10,000 cars from a month ago.

Rising outturn is accompanying the rise in backlogs, reports Association of American Railroads. Some 3480 cars were delivered in August, compared with 2192 in July.

Prospects are good for the splurge to continue. Early predictions of fourth quarter freight car loadings say there will be substantial gains over a year ago. And car loadings are how railroads make their money.

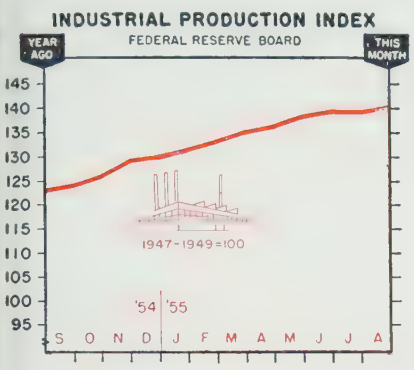
Furnace Sales Stay Hot . . .

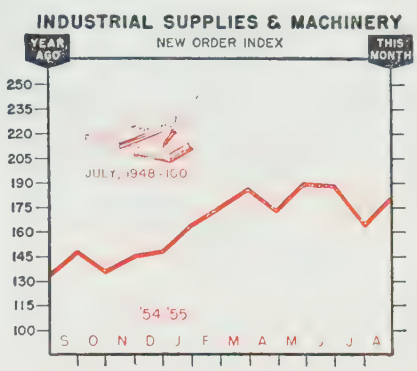
Industrial furnace makers continue to enjoy good business, reports Carl L. Ipsen, executive vice president, Industrial Heating Equipment Association. Orders for furnaces in August were $6.3 million, 144 per cent more than in that month of last year. Induction and dielectric heating equipment had August sales of $1.7 million, about double what they were last year.

For 1955 to date, net orders for furnaces and control equipment are $53 million, up 77 per cent from a year ago.

Construction Builds Up . . .

Heavy construction continues to rebound from its mild, short-lived dip in July and August. Latest weekly contract awards were $433





(seasonally adjusted)

	Total Production		Primary Metals		Metal Fabricating	
	1955	1954	1955	1954	1955	1954
Jan.	131	125	127	111	156	155
Feb.	133	124	131	108	157	152
Mar.	135	123	135	103	158	148
Apr.	136	123	138	104	160	146
May	138	124	140	106	162	147
June	139	124	143	108	163	145
July	139	124	134	104	167	148
Aug.	140*	123	141*	105	169*	148
Sept.	...	124	...	117	...	148
Oct.	...	126	...	110	...	149
Nov.	...	129	...	118	...	155
Dec.	...	130	...	120	...	156
Avg	...	125	...	110	...	150

Federal Reserve Board. *Preliminary

	1955	1954	1953
Jan.	164.4	139.8	157.4
Feb.	175.1	140.5	172.9
Mar.	186.9	141.5	188.2
Apr.	173.7	131.9	182.1
May	191.6	129.4	171.1
June	189.1	136.4	160.0
July	163.7	119.4	155.3
Aug.	....	132.5	139.6
Sept.	....	148.1	150.6
Oct.	....	136.3	146.0
Nov.	....	146.2	144.8
Dec.	....	148.8	136.7

Amer. Supply & Machinery Mfrs.' Assn.

million, reports *Engineering News-Record*. Total for the year to date is a record $13.9 billion, 31 per cent above a year ago and 16 per cent over the previous high of 1952.

Private construction continues to provide the backbone of the boom. Mass housing is one of the strong points. It has racked up $4.7 billion for the year, 49 per cent higher than a year ago. Industrial building continues its upward surge.

PAs Have Optimism . . .

"There is little doubt in the minds of purchasing executives that business can do anything other than remain on its present high plateau throughout the balance of 1955 and into 1956," says the National Association of Purchasing Agents.

High production is one of the reasons. A record 93 per cent of the PAs report a production gain in September over August. Prices, too, are high, but that doesn't seem to be discouraging buyers.

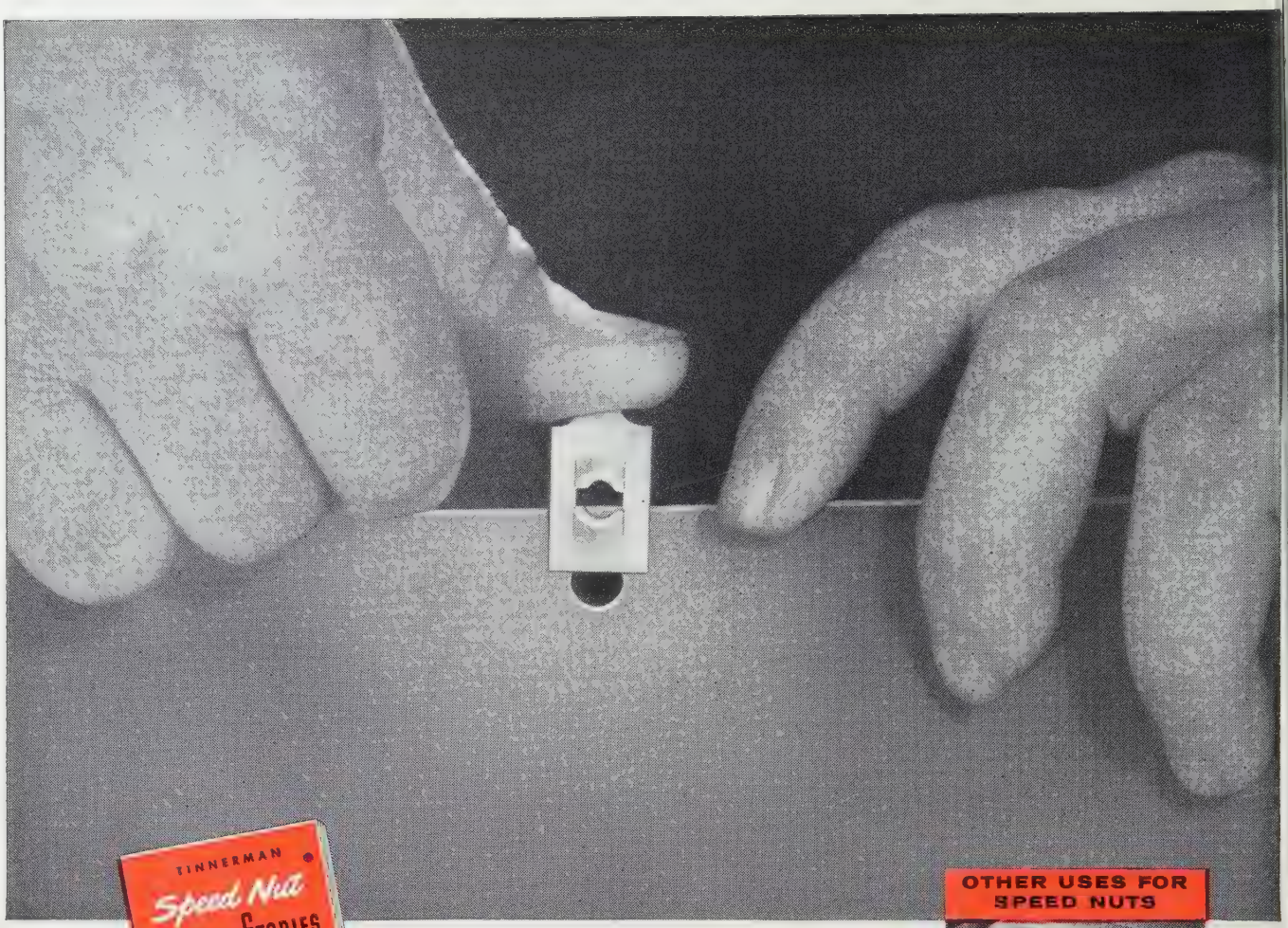
Inventories are a little stronger, but many of the PAs would increase their stocks even more if they could get the materials. (See STEEL's own survey on the situation in industrial components, page 49.)

Buying Policy Lengthens . . .

Thirty per cent report higher stocks, reflecting mostly PAs who have liberalized their buying time. About a quarter report inventories lower without any intentional effort on their part to reduce them. Greater demand than supply and high consumer spending are the big factors in keeping inventories at a lower level than might seem justified in such a high production period.

Buying policy continues to lengthen. Almost half feel that the 90-day-and-over range is the necessary lead time on production materials. On MRO supplies, though, most are in the hand-to-mouth to 60-day basis. Only a quarter are willing to extend to a 90-day interval.

The employment picture presents the same general optimism of the rest of the survey. Sixty per cent report employment the same as last month, many adding, "at the same high level." Only 6 per cent noted a decline, and most of those had some kind of "plausible explanation."



TINNERMAN
Speed Nut
SAVINGS STORIES

Thumb Replaces Spot Welder with Tinnerman SPEED NUTS!

Here is a typical assembly-line scene . . . a Tinnerman "J" type SPEED NUT being applied to a panel where a weld-type fastener was formerly used. That's the way to cut assembly costs—by saving precious man-hours and eliminating the need for special skills, tooling and equipment!

This one-piece, self-locking, spring steel SPEED NUT brand fastener not only makes welding unnecessary, but it also eliminates clinching, staking, tapping, and costly threaded inserts. It snaps in place by hand quickly, easily, and provides a heavy-duty vibration-proof attachment. Self-retained in screw-receiving position, it is ideal for blind-location assembly.

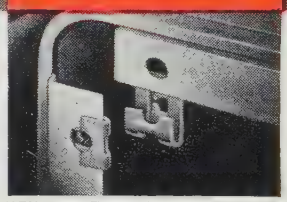
"J" type SPEED NUTS are available for a full range of screw sizes and panel thicknesses. In all, there are more than 8000 variations of SPEED NUT brand fasteners to help you reduce assembly costs. See your Tinnerman representative soon . . . and write for your copy of SPEED NUT "Savings Stories."

TINNERMAN PRODUCTS, INC. • BOX 6688, DEPT. 12, CLEVELAND 1, OHIO

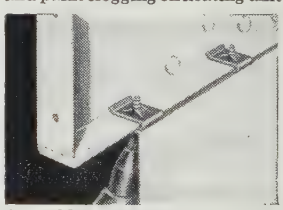
Canada: Dominion Fasteners, Limited, Hamilton, Ontario. *Great Britain:* Simmonds Aerocessories, Limited, Treforest, Wales. *France:* Aerocessoires Simmonds, S. A., 7 rue Henri Barbusse, Levallois (Seine). *Germany:* Hans Sickinger GmbH "MECANO", Lemgo-i-Lippe.

TINNERMAN Speed Nuts®
FASTEST THING IN FASTENINGS®

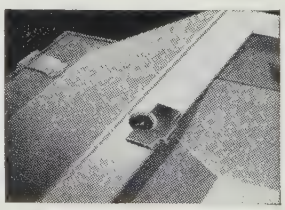
OTHER USES FOR SPEED NUTS



"J" type SPEED NUTS eliminate problems of hole misalignment and paint clogging on heating unit.

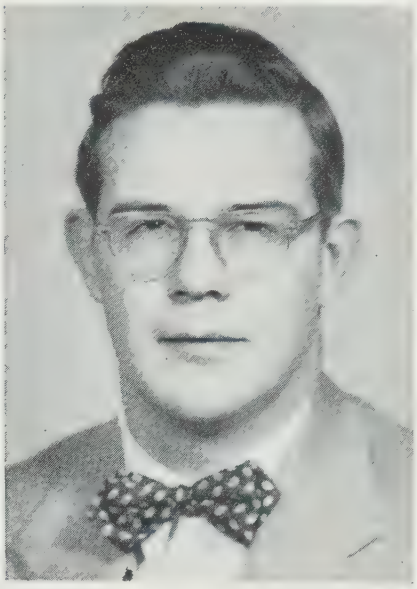


Assembly costs cut 50% on farm equipment with "J" type SPEED NUTS.



"J" type SPEED NUTS help plastic sign maker save 48% in assembly costs.

JAMES M. DARBAKER
. . . Copperweld Steel president



GEORGE BAILLIE JR.
. . . sales mgr. of Bliss rolling mill

WILLIAM M. BURR
. . . heads dept. at Control Engineering

James M. Darbaker was elected president, **Copperweld Steel Co.**, Pittsburgh, to succeed **Frank R. S. Kaplan**, now chairman of the board. Mr. Darbaker was senior vice president. **Henry G. Riter III**, president of Thomas A. Edison Inc., was elected honorary chairman of the board and chairman of the finance committee.

R. G. Halvorsen fills the new post of executive vice president of **Hamilton Mfg. Co.**, Two Rivers, Wis., and was elected a director. He was vice president-sales. He will co-ordinate sales, manufacturing and research activities.

William E. Fowler and **Herman J. Spoerer** were elected vice presidents of **Youngstown Sheet & Tube Co.**, Youngstown. Mr. Fowler was general traffic manager. Mr. Spoerer was director of industrial relations.

Norman W. Calkins, formerly with Carpenter Steel Co., joined **Universal-Cyclops Steel Corp.** as assistant manager of tool steel sales and assistant to W. J. Long, vice president. Mr. Calkins will have headquarters at the Cyclops Division, Titusville, Pa.

William N. Rathbun was made plant facilities engineer at **Temco Aircraft Corp.**, Dallas. **James F. Parrish** succeeds Mr. Rathbun as chief industrial engineer.

George Baillie Jr. was made sales manager of **E. W. Bliss Co.'s** rolling mill division at Salem, O. He has been acting sales manager since January.

Robert C. Baumgartner was appointed general sales manager of **Oster Mfg. Co.**, Cleveland. Associated with Oster for 20 years, he has been export manager for the last nine years.

George R. Trumbull was made general sales manager, **Westfield Mfg. Co.**, Westfield, Mass., subsidiary of **Torrington Co.** He succeeds **Charles J. Fogarty**, who retired Sept. 1 as vice president-sales manager. **Joseph A. Sarka** succeeds Mr. Trumbull as Torrington's manager of distributor sales, antifriction bearings.

Union Twist Drill Co., Athol, Mass., elected **Stanley Holland** president to succeed **George F. Holland**, now chairman of the board. **John C. Molinar** was named vice president-sales; **Rossiter Holt**, vice president and general manager of the S. W. Card plant; **John Engelsted**, vice president in charge of production of the Union Twist Drill plant.

Paul L. Bruhn was made division manager of Republic Steel Corp.'s **Berger Division**, Canton, O. He has been acting division manager since January.

William M. Burr heads the new aircraft and missile section of **Control Engineering Co.**, Detroit, subsidiary of Jervis B. Webb Co. The new section will handle precision test equipment for the aircraft and guided missile industries, both private and governmental.

Henry G. Greene was made purchasing agent, **Continental Gin Co.**, Birmingham. He succeeds **Henry F. Davis**, who continues with the department as a consultant.

Joseph M. Safie was elected president and chairman, **Reliance Mfg. Co.**, New York. **Elias Safie** was named to the new post of executive vice president.

Donald C. Morgan, Chicago district sales manager of **Rockwell Mfg. Co.'s** meter and valve division, was named central regional sales manager with offices at Pittsburgh. He is succeeded at Chicago by **R. V. Burnette.** Mr. Morgan replaces **Carl C. Moore**, retired.

Henry B. Williams was made sales manager for the New York plant of **Joseph T. Ryerson & Son Inc.**, 203 Westside Ave., Jersey City, N. J. **William K. Underhill**, assistant manager who formerly was responsible for sales management, will devote his time to other executive duties.

SKF Industries Inc., Philadelphia,

KENNETH W. McKENZIE
. . . Industrial Tectonics sales mgr.

DON L. HINMON
. . . heads new Johns-Manville div.

T. TRINER JANSEY
. . . Triner Scale & Mfg. exec. v. p.

appointed **F. H. Williams** manager of its railway department.

Industrial Tectonics Inc., Ann Arbor, Mich., appointed **Kenneth W. McKenzie** sales manager. Formerly production manager, he succeeds **Helmut F. Stern**, who now devotes himself exclusively to duties of general manager. **Gerald L. Buhrman** was made plant manager in charge of all manufacturing operations.

William A. Mann of Chicago was elected a commercial vice president of **General Electric Co.** He has been assigned as resident officer to the new regional headquarters in St. Louis.

J. A. Lindberg was named regional sales manager, brass products, in the northern Ohio-Michigan region for the metals division of **Olin Mathieson Chemical Corp.** He is at Detroit. **Peter L. Brett** was assigned to the Detroit district as sales representative for the division.

William H. Lang was made assistant vice president, **United States Steel Corp.**, New York. He continues as assistant treasurer of the corporation and president, United States Steel Homes Credit Corp.

Jones & Laughlin Steel Corp., Pittsburgh, promoted **W. F. Gaspar** to resident engineer, Minnesota ore division, and **R. W. Maki** to resident engineer, Michigan ore division.

The industrial products division of **Johns-Manville Corp.**, New York, was divided into three operating divisions. **Don L. Hinmon** is general manager, industrial insulations division, and was elected vice president of Johns-Manville Sales Corp. Other managers are: **Francis J. Wakem**, packings and friction materials division; **Robert F. Orth**, pipe division. Named to Mr. Hinmon's staff are **Thomas H. Eaton**, production manager (also elected vice president of Johns-Manville Products Corp.); **J. B. Jobe**, merchandise manager; and **Edward D. Flavin**, general sales manager. Both also were elected vice presidents of Johns-Manville Sales Corp.

R. A. McCarroll was made manager of industrial engineering at the new engine plant of **Plymouth Division**, Chrysler Corp., Detroit.

F. E. Bickel was made general manager-sales for **Van Huffel Tube Corp.**, Warren, O.

W. Lunsford Long was elected president of three companies — **Haile Mines Inc., Tungsten Mining Corp.** and **Manganese Inc.**, New York. He succeeds the late **Hewitt S. West.**

Charles F. Schultz was made chief industrial engineer, Franklin Division, **Joy Mfg. Co.**, Franklin, Pa.

C. T. Erickson was made executive vice president of **Stillman Rubber Co.**, Culver City, Calif.

T. Triner Jansey was elected executive vice president, **Triner Scale & Mfg. Co.**, Chicago. He was administrative assistant to the president of Borg-Warner Corp.

Kinney Mfg. Division, Boston, New York Air Brake Co., appointed **W. H. Crowley** chief engineer and **J. Raymond Marshall** equipment sales engineer.

Dr. Paul W. Bachman was elected vice president and director of research and development for **Koppers Co. Inc.**, Pittsburgh.

Clifford A. Hampel, consulting chemical engineer, joined **Fansteel Metallurgical Corp.**, North Chicago, Ill., as manager, chemical equipment division.

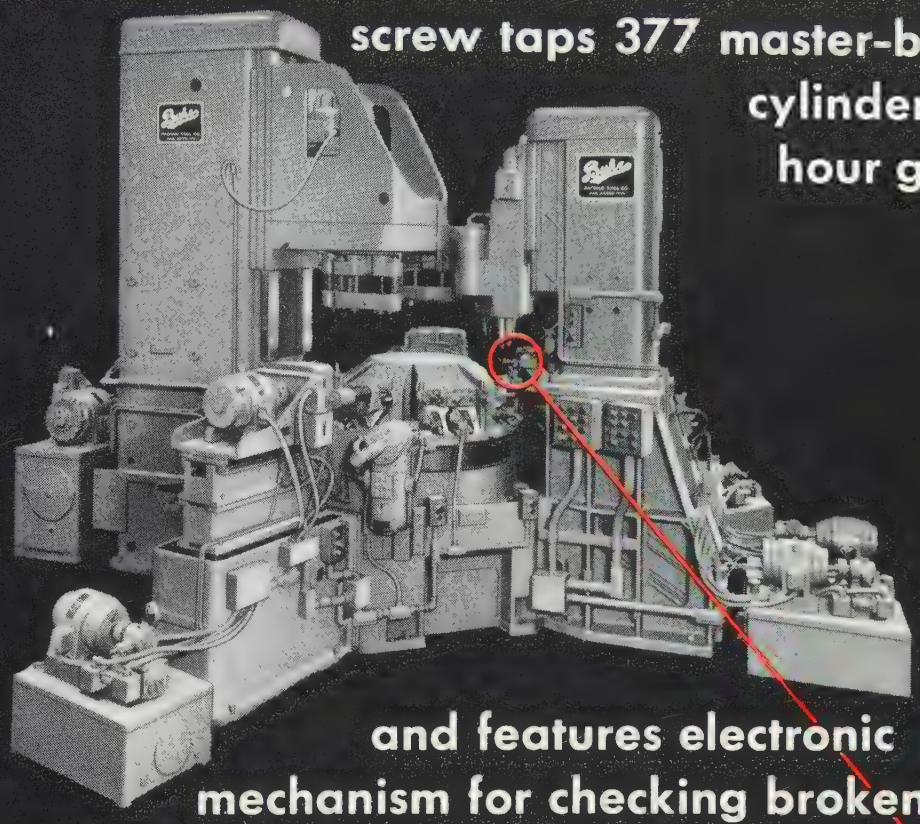
V. L. Spinney succeeds **R. L. Halsted** as manager of the central region at Cleveland for **Allis-Chalmers Mfg. Co.** Mr. Halsted is now manager of the firm's processing machinery department. **N. W. Landis** replaces Mr. Spinney as New York district manager. **A. J. Mestier Jr.** succeeds Mr. Landis as manager at Detroit.

Raymond J. Dunn Jr. joined **Machinery Engineering & Sales Co.**, manufacturers' representatives, as vice president. He will represent the company in New England from its Hartford, Conn., and Providence, R. I., offices. He was a sales engineer for Hartford Special Machinery Corp. and continues

REDUCING COSTS WITH—

Buhr ECONOMATION

Drills, chamfers, spot-faces and individual-lead-screw taps 377 master-brake cylinders an hour gross....



and features electronic mechanism for checking broken drills!

This 7-way dial-type hydraulic-feed Buhr Special has a 48″-diameter 7-position power-operated index table, complete with shot bolt. Two parts are loaded per station in each of its seven fixtures. Automatic clamping of fixtures is performed by a power-wrench with torque control.

Electronic mechanism automatically checks two .028 drills. Following each cycle, drill-checking arms swing sensing probes to and from drills. If either drill is broken, special electronic sensing-circuit stops machine and flashes failure-light.

Buhr

MULTIPLE-SPINDLE

H PRODUCTION MACHINERY

Find out how Buhr Economation can reduce your production costs. Phone, wire or write us. A consultation with one of our top sales executives will be arranged promptly!

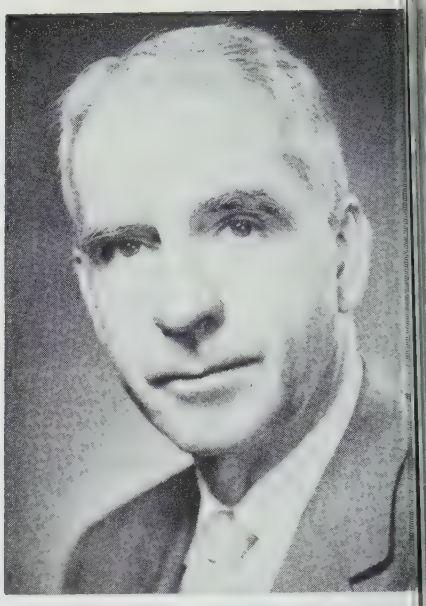
BUHR MACHINE TOOL CO.

ANN ARBOR, MICHIGAN

Solidly Engineered • Precision Built • for World's Leading Manufacturers

G. LAWTON JOHNSON
. . . president of Greer Marine Corp.

RALPH W. UPDEGRAFF
. . . chief industrial eng. at Timken



R. ADM. HARRY B. TEMPLE
. . . joins Robertshaw-Fulton Controls

to represent that firm in his new capacity.

G. Lawton Johnson was elected president of **Greer Marine Corp.**, subsidiary of Greer Hydraulics Inc., Jamaica, N. Y. **Edward M. Greer**, president of Greer Hydraulics, was elected chairman of the subsidiary. Mr. Johnson, vice president of Greer Hydraulics, continues in that capacity.

C. L. Whittaker was made district manager of **International Harvester Co.** at New Orleans and **J. W. Morris** assistant district manager at Birmingham.

Ralph W. Updegraff, chief industrial engineer, bearing division, **Timken Roller Bearing Co.**, Canton, O., was promoted to chief industrial engineer of the company. **Ross Russell**, senior industrial engineer in the bearing division, was promoted to divisional industrial engineer for the steel and tube division. **Clyde L. Van Horn** was made chief cost accountant to succeed **R. D. Sager**, retired.

William Spangler heads the new Kansas City sales office of **Resistoflex Corp.** **M. H. Eberle** is sales engineer at Chicago.

R. Adm. Harry B. Temple, USN ret., was named assistant vice president of **Robertshaw-Fulton Controls Co.** He will be in Washington. His primary duties: Research and development and mechanisms actuators and instruments manufactured by the Aeronautical Division, Anaheim, Calif. He also will be concerned with the company's expanding interests in atomic energy.

Edward J. Holzman, industrial sales manager, was elected a vice president of **Beals, McCarthy & Rogers Inc.**, Buffalo.

OBITUARIES . . .

Henry E. Warren Jr., 43, assistant general superintendent, **Fairless Works**, United States Steel Corp., Morrisville, Pa., died Sept. 16.

William H. Brink, 54, vice president, **Norwich Machine & Tool Corp.**, Milwaukee, died Sept. 15.

Fred M. Wyman, 65, assistant sales manager, **National Cylinder Gas Co.**, Chicago, died Sept. 18.

William F. Jennings, 69, president and treasurer, **Bound Brook Oilless Bearing Co.**, Bound Brook, N. J., died Sept. 14.

Carl G. Hoff, president, **Hoff Mfg. Co.**, New Haven, Conn., died Sept. 10.

John Hulst, 83, a former vice president of **United States Steel Corp.**, New York, died Sept. 15.

Adam Ross II, 91, president, **Ross Valve Mfg. Co.**, Troy, N. Y., died Sept. 11.

J. Ledlie Miller, 60, assistant chief combustion engineer, **Republic Steel Corp.**, Cleveland, died Sept. 21.

Raymond G. Fralick, 58, owner of **Len-Ray Machinery Co.** and president of **Ralco Tool Corp.**, both of Buffalo, died Sept. 12.

John B. Pottinger Jr., 53, assistant superintendent of control and copper production at Buffalo for **Westinghouse Electric Corp.**, died Sept. 19.

Bryan W. Conklin, 55, president and part owner of **Conklin Forging Co.**, Detroit, died Sept. 18.

Albert O. Wilson, 67, president, **A. O. Wilson Structural Co.**, Cambridge, Mass., died Sept. 19.

John P. Allen, 60, manager of marketing research in the apparatus sales organization of **General Electric Co.'s** lamp division, Cleveland, died Sept. 14.

Allyn G. Mould, 60, director of purchases for **Cleveland Graphite Bronze Co.**, Cleveland, died Sept. 19.

Andrew C. Denison, 67, chairman of the board of directors of **Fulton Foundry & Machine Co.**, Cleveland, died Sept. 20.

More Refractories

Harbison-Walker opens plant at Leslie, Md., to meet growing demand from steel industry

REFRACTORY producers are sharply increasing plant capacity to keep pace with expansion in the steel and other refractory-consuming industries. Physical properties have been enlarged. Operating techniques and machine design have been improved.

Harbison-Walker Refractories Co., Pittsburgh, one of the leading producers, has opened a plant for the manufacture of silica refractories at Leslie, Md. This is part of a $35-million expansion program started in 1951.

New Plants—This program included construction of: A silica refractories plant at Windham, O., and another at Fairfield, Ala.; a fireclay brick plant at Fulton, Mo.; and a basic brick plant at Marelan, Que. Other silica and fireclay brick plants were modernized and substantially enlarged. Capacities have been greatly increased at plants in Baltimore and Warm Springs, Calif., to produce basic refractories — magnesite, chrome and forsterite.

In 1954, the company purchased large deposit of fireclay near Ohiopyle, Pa., and a plant at Grantsville, Md., for the production of fireclay refractories. Construction of a plant for the manufacture of silica refractories at Leslie was begun in 1954 and completed early this year. Harbison-Walker is operating 29 continuous tunnel kilns and is constructing an additional kiln at Marelan, Que. It had 18 kilns in June, 1951.

Two types of silica refractories are made at the Leslie plant: Star brand, conventional class; and Mega brand, superduty class. These products are used in by-product coke ovens, open-hearth and electric steel furnaces, glass tanks and furnaces of many kinds employed in the refining of copper and other nonferrous metals. The latest operating techniques and laboratory developments are incorporated into the operation without losing the advantages of latest improvements in machine design. The mechanical and electrical controls in every stage of manufacture are simple and safe.

Progress Through Engineering

Ferro Corp., Cleveland, has a new continuous furnace for porcelain enameling steel and aluminum in the laboratory. The electric unit is 3 x 27 ft. It has preheat and cooling zones, simulating production continuous furnaces. Steel and aluminum porcelain enamels can be fired by using a separate heating unit for aluminum, which takes a lower fusing temperature. Ferro devotes 1 sq ft of floor space to research, development and engineering to every 5 sq ft of manufacturing space.

Baltimore Firm Opens Branches

Allied Research Products Inc., Baltimore, maker of plating chemicals and chromate conversion coatings for nonferrous metals, established warehouses in Cleveland, Detroit and Chicago.

Crane Packing Erects Buildings

Crane Packing Co., Chicago, is erecting two buildings on the outskirts of Morton Grove, Ill. They will house offices and extensive research and laboratory operations. The company produces mechanical seals, mechanical packings, lapping machines, pipe joint and thread compounds. A 126,000-sq-ft factory building is in operation at the site. The project will be completed early next year.

W. W. Sly Opens Branch Office

W. W. Sly Mfg. Co., Cleveland, opened a branch at 292 Worthington St., Springfield, Mass. Joseph Sharkey is district sales engineer for Sly's line of dust control systems, blast cleaning equipment, tumbling mills and industrial ovens.

Ritepoint Acquires New Product

Ritepoint Inc., Milwaukee, has taken over the cartridge case operation of the Nesco Division (that city), New York Shipbuilding Corp., Camden, N. J.

Armco Drainage Opens Plant

Production of corrugated metal pipe at the Charny, Que., plant of Armco Drainage & Metal Products Inc., subsidiary of Armco Steel Corp., Middletown, O., is beginning this month. Armco Drainage has more than 50 plants in operation in the U. S. and Canada, including a newly constructed one at Bishop's Falls, N. F. E. L. Campbell is vice president and manager of Armco Drainage & Metal Products of Canada Ltd., with headquarters at Guelph, Ont. Charles LaRose is superintendent of the Charny plant.

Ward Enlarges Warehouse

Ward Steel Co., Cambridge, Mass., has completed construction of two additional 40-ft bays at its warehouse in that city, increasing operating space one-third.

Federal Tool & Mfg. Expands

Federal Tool & Mfg. Co., Minneapolis, is building a 9000-sq-ft addition to its plant. It will house new equipment, including a 400-ton press, which will process stampings up to ½-in. thickness. Other equipment in the plant will be rearranged for greater operating efficiency. Federal Tool, producer of short-run stampings, has a branch plant in Rochester, N. Y.

Aro Equipment Buys Ampatco

Aro Equipment Corp., Bryan, O., purchased Ampatco Laboratories Corp., maker of precision instrument products. Aro makes highly specialized aircraft products, pneumatic tools and lubricating equipment. Ampatco, operating as a separate corporation in Aro's Cleveland plant, will make electromechanical devices and do development work on them.

Ammonia Plant Plans Progress

This fall heavy construction is expected to start on the anhydrous ammonia plant at the Geneva (Utah) Works of U. S. Steel Corp.'s Columbia-Geneva Steel Division. The Chemical Plants Division of Blaw-Knox Co., Pittsburgh, will build the plant. This

will be the first installation in a major steel plant in the U. S. using raw coke oven gas as the source of hydrogen for ammonia synthesis. It is expected to start a new trend in coal chemicals recovery.

Armco To Buy Equipment

Armco Steel Corp., Middletown, O., will convert the recently purchased Middletown facilities of Warren Steel Corp. into a pipe coating plant. About $360,000 will be spent to move the company's present pipe coating operation to the new plant and to install necessary equipment and facilities. New machinery for coating pipe with coal tar enamel will include abrasive cleaning equipment, a unit to line the inside of the pipe and a wrapping machine which coats the outside of the pipe and wraps it with a protective material. The plant will be equipped with a fume removal system.

Opens Research Laboratory

Alloy Rods Co., York, Pa., electrode manufacturing concern, opened its new research and development center in that city. Facilities include chemical, physical testing and welding laboratories, a machine shop and an experimental mixing and extrusion department.

Hoe Buys Plant in South

R. Hoe & Co. Inc., Bronx, New York, purchased the plant of Carolina Saw & Tool Co., manufacturer of carbide tip saws, at High Point, N. C. The property will be known as the Carbide Saw & Tool Division and will be the nucleus of a greatly expanded operation to include new building facilities and extensive new equipment.

Gearmaker Opens Branch

Philadelphia Gear Works Inc., Philadelphia, opened a district sales office at 1529 Pentridge Rd., Baltimore 12, Md. The office, under the direction of J. Frank Ottinger, will provide direct factory contact for the firm's gears, gear reducers, couplings, fluid agitators and valve controls.

Borg-Warner Broadens Research

Borg-Warner Corp., Chicago, is constructing a multimillion dollar research center at Algonquin and Wolf roads, Des Plaines, Ill. The laboratory will contain facilities for metallurgical, electronic, electrical, chemical, acoustical, hydraulic, applied mechanical, physics and nuclear research. It will house a complete machine and model shop, a computation center and a large technical reference library.

Milne Opens Branch Office

A. Milne & Co., New York, distributor of solid and hollow tool steels, opened a sales office at 14402 Bayshore Dr., Madeira Beach 8, Fla. The office is under the direction of Carl Buehler.

ASSOCIATIONS

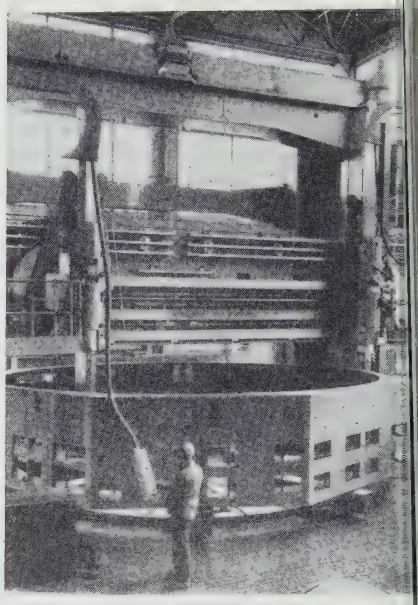
American Die Casting Institute, New York, re-elected its officers for the 1956 term. They are: President, W. J. During, president, Precision Castings Co., Syracuse, N. Y.; vice president, George Ralls, president, Pressure Castings Inc., Cleveland; David Laine, secretary; and W. J. Parker, treasurer.

REPRESENTATIVES

Hans C. Bick Inc., Reading, Pa., maker of chemical specialties to the metalworking trades, appointed M. M. Chatfield as sales and technical service representative with headquarters in Philadelphia.

Automatic Transportation Co., Chicago, appointed DeShazo & Thomas, Birmingham, as representatives for its equipment, including electric-driven industrial trucks.

Koehring Co., Milwaukee, maker of construction equipment, appointed W. B. Thompson as representative in California, Arizona, Utah and Nevada; H. H. Mobley as representative in the East South Central territory. They also represent Koehring Co.'s subsidiaries: C. S. Johnson Co., Champaign, Ill.; Kwik-Mix Co., Port Washington, Wis.; Parsons Co Newton, Iowa.



Installs Big Boring Mill

This 20,000-kva generator stator fram is being set up for finish machinin in Elliott Co.'s new 30-ft Niles ve tical boring mill built by Baldwi Lima-Hamilton Corp., Hamilton, C The enlarged machining facilities a Elliott's Jeannette, Pa., plant will b made available for outside contrac

Westinghouse Electric Corp., Pittsburgh, appointed Claud S Gordon Co., Chicago, as distributor of its standard industrial furnaces and related equipment.

Rivett Lathe & Grinder Inc., Boston, appointed Schroeder Bros., Pittsburgh, as representative for its line of air and hydraulic valves and cylinders and power units.

Robert J. Hostetter was appointed sales representative in Seattle for **Aero-Pneumatics Division of Pacific Airmotive Corp.,** Burbank, Calif.

Salem-Brosius Inc., Carnegie, Pa., maker of industrial furnaces and heat-treating equipment, was appointed exclusive agent for the sale and licensing of a new, ultra-high temperature furnace and the processes of **Metals Chlorides Corp.,** Middleport, N. Y. The newly developed processes may provide a major industrial tool to extend across a broad range of metal technology, says W. A. Wickwire Jr., president of Salem-Brosius.

Technical Outlook

ADDED STRENGTH— Smooth sheet titanium has been replaced by rigidized material to make an engine shroud lighter, stronger and more rigid at Convair. At the forming mill, an all-over pattern of ridges and dimples is rolled into the material. "Even though the new material is thinner than the sheet titanium we were using, it is stronger because of the pattern rolled into it," reports A. P. Higgins, works manager.

NEW APPROACH— Rule - of - thumb methods for determining if a lubricating grease will work with a certain gun can go by the board now. After studying the problem for several years, the National Lubricating Grease Institute came up with its Tentative Dispensing Method. The user of grease gets his answer by obtaining the apparent-viscosity, shear-rate curves of the grease from his supplier and relates it to flow-rate, apparent-viscosity curve which he secures from the maker of the grease gun. Then he can determine the temperature at which the needed amount of grease will be delivered.

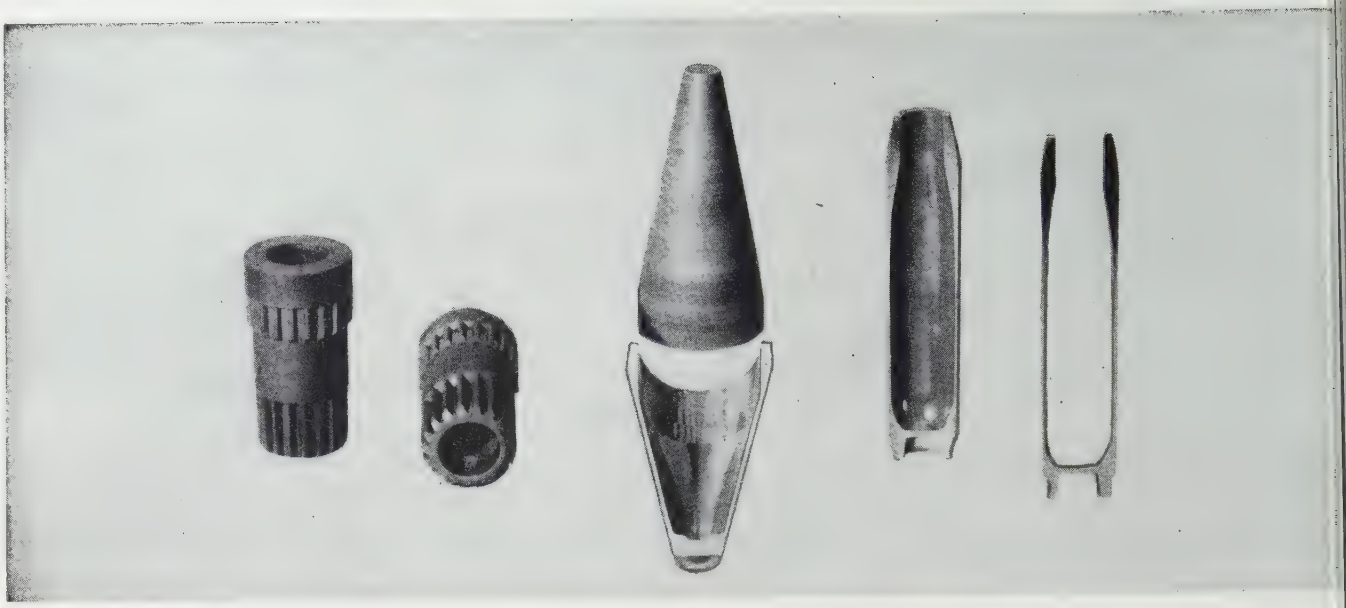
CONTINUOUS MOLDING— Miles-long rubber parts are being made by continuous molding, a process said to be cheaper, faster and as accurate as press molding and more exact than extruding. It can use softer rubber stocks. Users can cut to the length needed, eliminating practically all scrap.

PROTECTS AT HIGH TEMPERATURE— Uses for molybdenum, the king of high temperature metals (melting point, 4730°F, almost 2000°F above iron) are limited because it oxidizes rapidly at elevated temperatures. Much work is being done to find coatings that will protect its surface. Climax Molybdenum Co. says it has developed a metallic coating over which aluminum oxide is applied before sintering. Coated molybdenum parts will stand repeated heating and cooling for at least 500 cycles (1-in. test strips are heated to 1800°F in 30 seconds, held for 15 seconds, then cooled to room temperature in 45 seconds). The new coating is the only one Climax metallurgists have found that will stand the 500-cycle test consistently. The coating and test equipment will be exhibited in the Climax booth at the Metal Show in Philadelphia during the week of Oct. 17.

COUNTERACT— Westinghouse scientists are not satisfied with the corrosion resistance of double-purified zirconium. They have found that tin will counteract the harmful effect of impurities and not absorb many neutrons. Their new super-corrosion-resistant zirconium alloy contains 1.5 per cent tin, 0.12 iron, 0.10 chromium and 0.05 nickel.

DIECASTING STANDARDS— Five new product standards in the engineering series of the American Die Casting Institute have been issued. They cover: 1. Depth of cored holes. 2. Draft requirements for cored holes. 3. Ejector pin marks. 4. Machining stock allowances. 5. Flash removal. ADCI believes that a standard should describe the most economic and useful specification for diecastings when special requirements are not asked for.

MORE COPPER— Look for cheaper brass diecasting production within the next few years. The American Die Casting Institute says research on dies for higher melting point metals, such as copper-base alloys, shows encouraging progress. Improved die lubricants are being field tested.



Parts like these are convincing proof that . . .

Cold Extrusion Is Shaping Up

By JOHN E. KING
Cold Forming Division
Heintz Mfg. Co.
Philadelphia

MENTION COLD EXTRUSION to someone not versed in its application and out come the inevitable questions: "When do you use it and why?" Broadly, the answers are in the description of the two basic types of extrusion.

Backward extrusion may be used to make cup-shaped pieces that are not customarily formed without heat. A billet of bar stock can be formed to hollow shapes with marked savings in material, tolerances are closer than other methods allow and finishes are excellent.

Forward extrusion can save on drawing operations. It is possible to get substantially greater reductions by combining two or more draws into a single extrusion.

Improvement in physicals of low alloy steels is inherent in the process. Frequently, more expensive steels and heat treatment can be by-passed.

Best Applications—Briefly, they are:

1. A shape (generally cylindrical, either solid or tubular) which can have large variations in wall section—and, if tubular, with an opening so tools may be withdrawn. Heavy cold nosing in a single step is easy, however. Practical limits in a single forward extrusion may be a reduction in area of over 75 per cent. The same reduction is possible in a single backward extrusion, provided the ratio of the diameter of the cavity to its depth is not over 1 to 4.
2. The job should have a strength requirement ordinarily obtainable by heat treating medium carbon or low alloy steels.
3. There should be sufficient job quantity to warrant the costs of tooling and press setup.
4. You should be able to use the parts as they come off the press with minimum finishing or machining. Fine surface finish is something you get free—it comes from tools that must be polished in the neighborhood of 20 microinches.

Big Potential — When a piece meets the above description—and it fits a large number made by other methods—it is possible to reduce manufacturing operations significantly by cold extrusion.

Expensive hot forging and machining for dimensions may be eliminated. Savings in raw material, manpower, time and equipment may prove substantial. The best applications will be those in which cold extrusion was incorporated at the design stage.

Artillery Shells—Some idea of the extraordinary savings in material is evident from these data: A 75-mm shell weighing 8.9 lb is formed from a billet weighing 9.22 lb, a loss factor of 3.4 per cent; a 120-mm shell weighing 42.13 lb, from a 43.3-lb billet; a 155-mm shell weighing 76.25 lb, from a 78-lb billet; and an ogive for a 106-mm shell weighing 3.6 lb, from a 4.25-lb billet.

Labor savings: Machining operations on each shell were trimmed from 29 to 5. Material savings: Since cold shaping greatly enhances physical properties, specifications were met with low carbon steel. Eliminated was the need for final heat treatment, which is required when hot forging is used.

Press Life—Compared with that

Average Physical Properties of Steels for Cold Shaping

Type	ANNEALED Ultimate Strength psi	ANNEALED Yield Strength psi	ANNEALED % Elong. in 2" Gage Length	AFTER EXTRUSION Ultimate Strength psi	AFTER EXTRUSION Yield Strength psi	AFTER EXTRUSION % Elong. in 2" Gage Length	% Increase in Yield Strength	% Decrease in Elongation
1010	51,000	24,000	40	118,500	117,400	13.5	390	66
1018	60,100	28,850	39	146,000	133,500	12.0	364	69
1030**	67,250	49,500	31	166,000	161,000	9.0	225	71
1035**	84,000	50,000	30	164,000	160,500	5.5	220	82
4130	81,250	52,250	28	166,500	139,000	14.5	166	48
4140	95,000	60,400	26	178,500	159,000	12.0	163	54
5130	89,000	55,000	28	157,000	115,500	12.0	110	57
6120**	75,000	55,000	32	144,000	115,000	14.0	110	57
8620	77,750	55,875	31	144,350	125,650	14.0	124	55
8630	81,750	54,000	29	171,000	166,350	12.0	206	58.5
8730	98,000	65,000	25	154,000	145,000	17.5	123	30
*NAX 9115**	70,000	50,000	35	167,000	163,500	9.0	227	74

*Steel mill designation **As received hot rolled bar

f conventional hot forging dies nd punches, the longevity of cold ress tools is almost unbelievable. n our most severe backward ex- rusion operation, to date we have xceeded 480,000 pieces without neasurable wear on a carbide unch.

Die rings don't stand up too ell, but we've developed and pat- nted a means of quick inter- hangeability of such inexpensive earing members so that almost the same economic status is achieved.

Of course, we use wear resistant carbide materials where function and quantity permit. On die bushings we use oil hardening tool steels.

Selecting Raw Materials — For many years we have been developing items using other than low carbon steel, namely the AISI 6100, 4000, 4100, 5100, 8600, 8700 and higher carbon steels. Latest figures on properties reveal some exceptionally high strengths without heat treatment. Typical physicals of materials (after, say, six press operations) are compared with those of annealed materials in the table above.

The primary aim in testing was to obtain highest strength properties without tool failure. Current data were taken from tests on a hollow body formed by both backward and forward extrusion.

The greatest percentage increase in yield strength through cold shaping was in the carbon steels. Of the low alloys, 5130 exhibited best enhancement of yield strength. Conversely, elongation was decreased accordingly as the yield strength increased. However, good ductility remained.

Tool Engineering—Much progress has been made in the last ten years on tool and development engineering. This work is highly complex. With such extreme results gained, extreme measures are the rule, not the exception. Yet our production people don't find our controls too tight.

Experience must supplement development engineering on each new application. Each presents a new problem since the business of moving metal cold in dies is a highly intricate one. Metal must be controlled in flow without being restricted to the point where excessive load buildup causes tool failure. And at the same time, that metal is being formed into accurate dimensions and volumes.

Typical Applications for Cold Forming

Hydraulic cylinder

Old Way—Originally designed and manufactured in three major pieces. Weight of materials at start, 2.75 lb—a tube and two end caps, the latter produced on screw machines. Assembly brazed and machined and the bore honed.

New Way — A 2.2 lb billet of 1015 steel is cold formed in press operations to finished weight of about 2 lb. Tolerance on inside diameter, 0.002 in. Surface finish, 20 rms. Total saving, 30 per cent.

Stainless steel ring

Old Way—Had been made by machining a forging or completely machining a rolled strip.

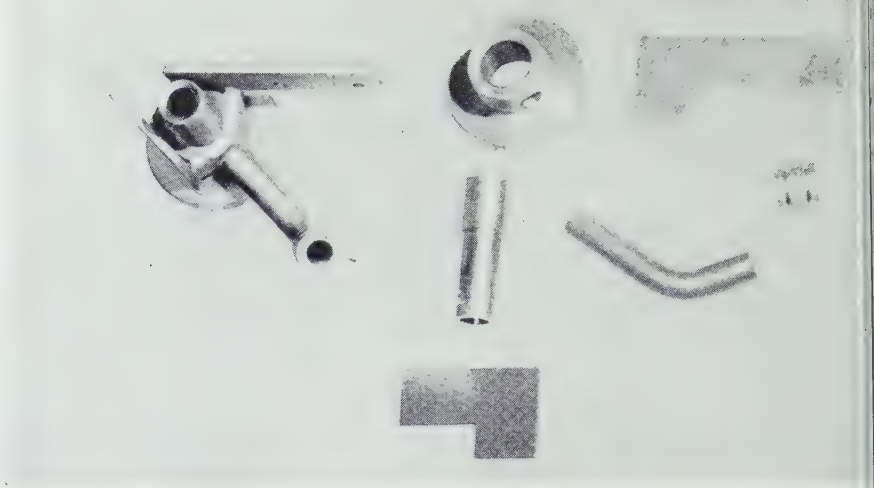
New Way—Strip of 18-8 stainless is formed and welded. Shoulder on one end is forward extruded, then indents and bosses are coined. Total saving, 40 per cent.

Truck differential gear

Old Way—Produced by machining a hot forging in variety of operations.

New Way—Start with 8620 steel billet weighing 7.6 lb. Only machining required on pressed part is facing of both ends, an undercut for forked groove and a small relief cut. Finished weight is 4.55 lb. Customer saving, 20 per cent.

By WILLIAM W. LAMB
Sales Manager
Precision Metalsmiths Inc.
Cleveland



As originally produced

As precis

What Alloy for Investment Casting?

Standard Investment Casting Alloys

	Low Alloy Steels				Austenitic Stainless			Martensitic Stainless		
	4620 Mod	4140 Mod	6150 Mod	52100 Mod	Type 302	Type 316	Type 347	Type 410	Type 420	Type 440-A
Carbon	0.15-0.25	0.35-0.45	0.45-0.55	0.95-1.10	0.08-0.15	0.15 max	0.12 max	0.15 max	0.20-0.40	0.60-0.75
Silicon	1.0 max	1.0 max	1.0 max	0.75 max	1.0 max	0.75 max	1.0 max	1.0 max	1.5 max	1.0 max
Manganese	0.50-0.70	0.50-1.0	0.5-1.0	0.60 max	1.5 max	1.5 max	2.0 max	1.0 max	1.0 max	1.0 max
Sulphur	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max
Phosphorus	0.04 max	0.04 max	0.04 max	0.04 max	0.04 max	0.04 max	0.04 max	0.04 max	0.04 max	0.04 max
Chromium	—	0.80-1.10	0.80-1.10	1.25-1.60	17.0-19.0	16.0-18.0	18.0-19.5	11.5-13.0	11.5-14.0	16.0-18.0
Nickel	1.5-2.0	—	—	—	7.0-10.0	12.0-14.0	10.0-14.0	0.50 max	1.0 max	—
Molybdenum	0.20-0.30	0.15-0.25	—	—	0.5 max	1.5-2.25	0.50 max	0.50 max	0.50 max	0.75 max
Copper	—	—	—	—	0.5 max	0.5 max	0.50 max	0.50 max	0.50 max	—
Iron	bal	bal	bal	bal	bal	bal	bal	bal	bal	bal
Others			V 0.15 min				Cb + Ta 10 x C min 1.5 max			
HEAT TREATED										
Tensile Strength psi	96,000	132,200	115,500	110,000	80,000	81,000	77,500	156,000	100,000	102,300
Yield Strength psi	59,000	117,200	91,400	108,000	40,000	34,800	40,500	143,000	76,000	92,200
% Elongation in 1 in.	14.0	4.5	2.5	1.0	45.0	48.0	44.0	3.5	4.0	2.0
Hardness	Rb 85-95	Rc 28-32	Rc 25-28	Rc 24-27	Rb 84-86	Rb 73-75	Rb 73-75	Rc 32-38	Rc 27-30	Rc 36-40
ANNEALED										
Tensile Strength psi	90,700	117,200	102,000	101,000	75,000	78,000	78,300	100,000	95,000	95,500
Yield Strength psi	41,500	69,200	58,000	68,000	35,000	34,000	28,000	77,000	50,000	65,200
% Elongation in 1 in.	20.0	19.0	16.0	18.0	55.0	44.0	33.0	20.0	15.0	3.0
Hardness	Rb 88-92	Rb 94-99	Rb 90-95	Rb 90-95	Rb 80-83	Rb 76-78	Rb 86-89	Rb 96-100	Rc 18-22	Rc 20-25
AS CAST										
Tensile Strength psi	130,000	155,000	225,000	—	—	—	—	204,000	220,000	—
Yield Strength psi	110,000	142,000	200,000	—	—	—	—	128,000	165,000	—
% Elongation in 1 in.	15.0	9.0	—	—	—	—	—	6.0	1	—
Hardness	Rc 26-30	Rc 33-36	Rc 62 max	Rc 63 max	—	—	—	Rc 40-44	Rc 45-48	Rc 58 max
Castability	Fair	Good	Good	Exc	Exc	Exc	Exc	Poor	Fair	Good
Machinability†	65A	60A	45A	35A	25A	25A	25A	55A	40A	40A
Weldability	Good*	Good*	Good*	Good*	Good*	Good*	Exc	Fair*	Fair*	Fair*
Properties and Uses	High mechanical properties. Structural members, tool holders, farm machinery and automotive parts				Corrosion resistance and resistance to scaling at high temperatures. Aircraft and missiles, dairy and photographic equipment			Hardness and limited corrosion resistance. Cutlery and surgical instruments, petroleum, beverage and steam blow pump parts, valves		

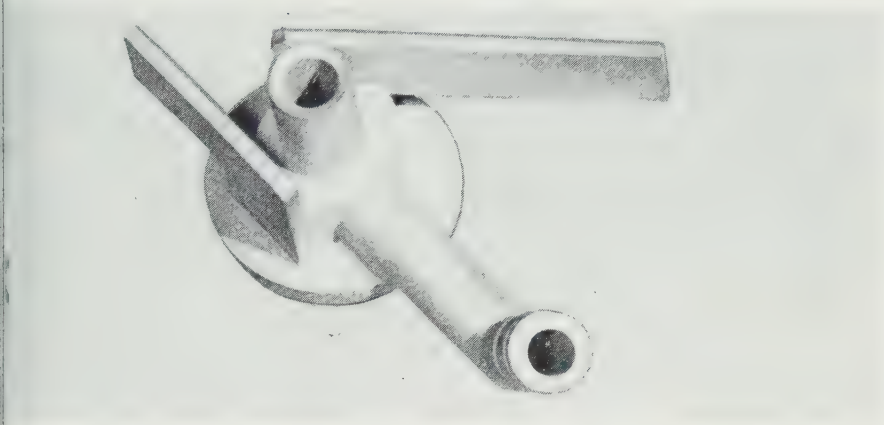
† B-1112 steel equal 100% machinability used as basis for rating A—annealed, AC—as cast * Requires pre and post heat treatment

'HIS VALVE once had six parts nade of three metals—brass, cop-er and steel. Now, it's a single in-estment casting; one material, a eryllium-copper alloy, is used.

Price of the pressure-tight in-estment casting is $4.90. The as-embled part cost about $18.

Investment castings eliminate up to 90 per cent of machining; **metal cost is a minor item.**

But cost figures point up only one of the advantages of investment castings. Equally important are the design flexibility and the wide selection of alloys. There are over 250 alloys to chose from. Representative alloys and their properties are given in the abridged chart below.



Versatility—The process is used for experimentation and high production.

Two or more pieces of the expendable pattern materials (wax, plastic or frozen mercury) can be joined to form a compound pattern. Result: A cast assembly.

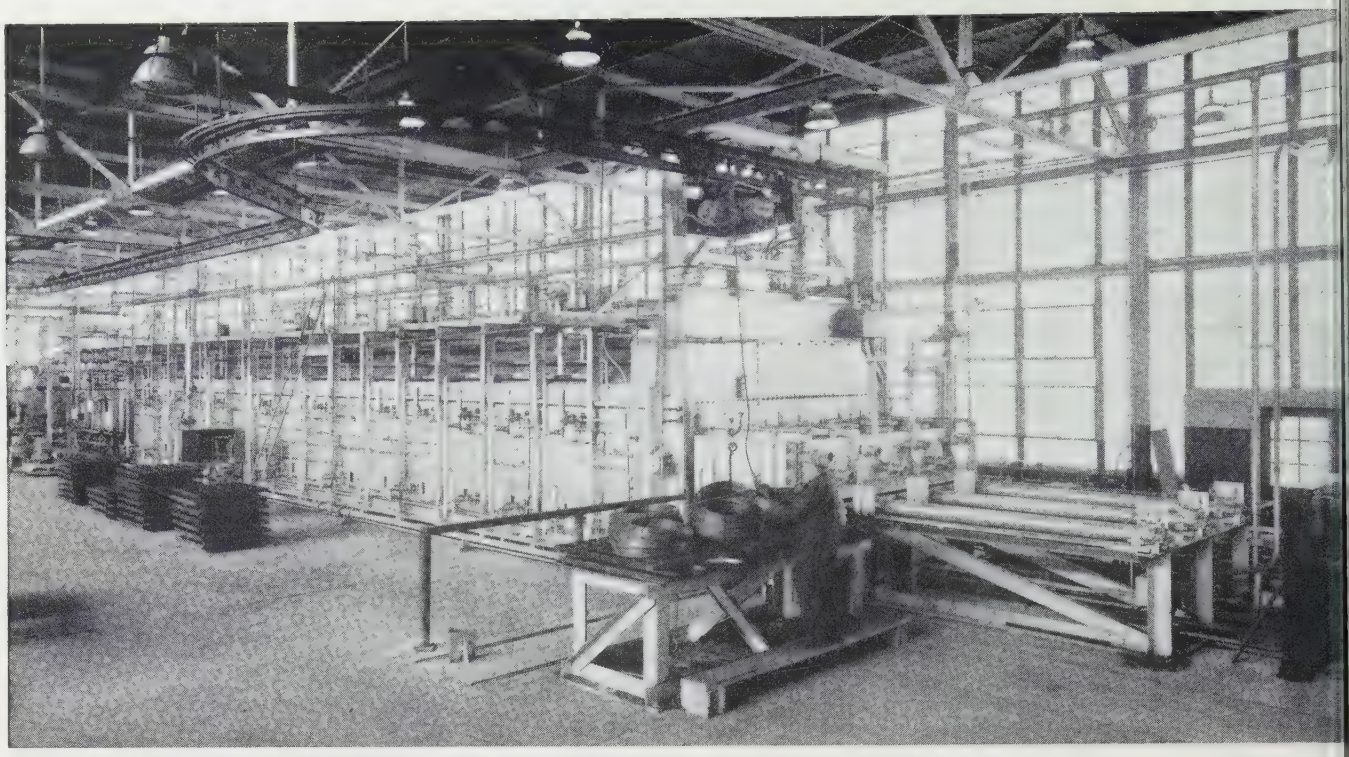
Investment castings usually are small or intricate. In many cases the parts are too expensive or impossible to machine or fabricate.

High standards of tolerance and quality are maintained. Melting is carefully controlled by small arc or induction furnaces.

Unique — Only by investment casting can some nonmachinable, nonforgeable alloys be shaped. Use of expendable patterns eliminates the parting line where accuracy often is lost.

'recip. ardening	Nickel Alloys			Copper-Base Alloys				Aluminum Alloys			
4 PH lloy	S Monel	Cast Monel	Beryllium Nickel	Beryllium Copper	Silicon Brass	Navy "G" Bronze	Aluminum Nickel Bronze	Type 356	Type 355	40-E	Tern Alloy #7
7 max	0.30 max	0.30 max	0.4 max	—	—	—	—	—	—	—	—
max	3.5-5.0	1.0-2.0	—	0.20-0.35	3.0-5.0	—	—	6.5-7.5	4.5-5.5	0.25 max	0.2 max
max	0.50-1.5	0.5-1.5	—	—	—	—	3.5 max	0.3 max	0.5 max	0.30 max	0.4-0.6
3 max	0.03 max	0.03 max	—	—	—	—	—	—	—	—	—
4 max	0.04 max	0.04 max	—	—	—	0.05 max	—	—	—	—	—
5-17.5	—	—	0.80 max	0.005 max	—	—	—	—	—	0.4-0.6	0.2-0.4
-5.0	62.0-68.0	62.0-68.0	bal	—	—	1.0 max	3.0-5.5	—	—	—	0.2 max
—	—	—	—	—	—	—	—	—	—	—	—
-5.0	bal	bal	—	bal	bal	86.0-89.0	78.0 min	0.2 max	1.0-1.5	0.30 max	0.2 max
	3.5 max	2.5 max	—	0.25 max	—	0.15 max	3.0-5.0	0.6 max	0.8 max	1.0 max	0.8 max
+ Ta	—	—	Be 2.55-2.8	2.5-3.0		—		Mg 0.2-0.4	0.4-0.6	0.5-0.7	1.8-2.4
5-0.45	—	—		Al 0.15 max			Al 10.0-11.5	bal	bal	bal	bal
	Pb 0.01 max	0.01 max		Pb 0.02 max	0.5 max	0.30 max		Ti 0.2 max	0.2 max	0.1-0.3	0.2 max
				Zn 0.10 max	12.0-16.0	1.0-3.0		Zn 0.3 max	0.3 max	5.0-6.0	4.0-4.5
				Co 0.30-0.65		Sn 9.0-11.0					
.000	134,000	65,000	115,000	75,000	60,000	40,000	85,000	22,000	22,000	—	30,000
,000	121,000	32,500	60,000	40,000	24,000	18,000	40,000	15,000	15,000	—	19,000
	6.0	25.0	7.0	30 max	15	20	10.0	0.7	0.5	—	2.0
38-41	Rc 33-38	Rb 76	Rc 24-30	Rb 75-90	Rb 56-58	Rb 48-51	Rb 87-90	—	—	—	bhn 65 min
								(—T51)	(—T51)	(—T5)	(#)
,500	99,300	—	90,000	55,000	—	—	—	25,000	26,000	32,000	36,000
,700	74,000	—	50,000	30,000	—	—	—	17,000	18,000	22,000	26,000
	16.0	—	8.0	50 max	—	—	—	3.0	1.5	3.0	3.0
33-36	Rc 24-26	—	Rc 20-25	Rb 60-85	—	—	—	bhn 45-50	bhn 50-55	bhn 65 min	bhn 70-75
								(—T6)	(—T6)		(—T6)
,000	140,000	—	200,000	175,000	—	—	100,000	32,000	33,000	—	40,000
,000	126,000	—	190,000	155,000	—	—	55,000	28,500	29,000	—	37,000
	2	—	0-2	1	—	—	5.0	3.0	2.5	—	0.5
40-45	Rc 42 max	—	Rc 52-56	Rc 40-44	—	—	Rb 93-97	bhn 65 min	bhn 70 min	—	bhn 75-85
	Good	Good	Good	Exc	Exc	Good	Fair	Exc	Exc	Fair	Fair
	35A	40AC	55A	20AC	60AC	20AC	20AC	75 (—T6)	75 (—T6)	75 (—T5)	75 (—T6)
	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Good‡	Good‡
rosion istance, dness. rs, ns, craft trols	Corrosion, heat and wear resistance. Valve and pump parts for food and chemical industry, non-galling valve seats, bushings, turbine parts			Corrosion and wear resistance. Boat and ship hardware, pump and valve parts, electrical applications, oil extracting equipment, parts to be plated				Corrosion resistance at normal temperatures, low weight. Radar wave guides, fuel pump impellers, aircraft structural members, housings and bodies			

21 days at room temperature or 8 hours at 210° F. ‡ brazing



This unit, which does the work of seven bell-type furnaces, points up . . .

New Trend in Wire Annealing

A CONTINUOUS, pusher-type furnace in a Massillon, O., plant could be changing the present concept of wire annealing. This unit is turning out almost as much volume as a battery of seven bell-type furnaces, to say nothing of improving product uniformity.

Some two years ago, a management team from this plant, the Reliance division of Eaton Mfg. Co., sat down with engineers of Surface Combustion Corp., Toledo, O. "Is it possible," they asked, "to take advantage of the high output, flexibility and control accuracy of a continuous furnace?"

No one knew for sure, but that started the wheels turning.

Success—After several months of operation, Eaton has the answer. Depending on the cycle chosen for the material being annealed, the furnace can turn out close to 5000 lb an hour. The clean, decarb-free surface of the coils coming off the exit end proves the effectiveness of the controlled atmosphere.

As to the flexibility of the furnace, the dozen grades of steel treated so far include: 1010, 1017, 1022, 1035, 1060, 1080, 1090, 50100, 51100, 52100, 8630 and 9254. This wire goes into a myriad of snap rings, bearing rings, retainer rings, lock washers and patented fasteners.

The Furnace—Some 135 ft from charging pushers to exit pullers, the installation outwardly resembles a Surface furnace used for malleablizing castings. The furnace proper has five zones, with horizontal rows of radiant tubes above and below the charge. Usually the first two zones are used for heating and soaking, while the following are used for controlled cooling. Between the furnace and the cooling stage is a 7-ft refractory transition zone that is neither heated nor cooled. Next comes the 24 ft 6 in. fast cooling section that is flanked by water tubes.

Entrance and exit vestibules are identical. Each has a car which travels at right angles to the direction of furnace flow, and each car accommodates three 42-in. square trays capable of holding 1000 lb of wire each. Air-tight doors to the vestibules are integral to the cars.

How It Works—There are 28 strings of trays in the furnace by the time the first string is ready to be pulled out. With the exit vestibule purged and filled with RX gas of the same analysis as the furnace, the furnace door is lifted and the pulling tongs engaged to the three trays. A hydraulic puller moves the wheel-equipped trays into the vestibule and onto the exit car. The furnace door closes and the vestibule car moves over to the unloading area.

While this is taking place, a similar cycle is in progress at the charging end, except in reverse.

he inner furnace door is raised nd the charge pushed. This, of ourse, pushes the entire furnace ad ahead one tray length. Three aded trays are rolled onto the iarging car; the car moves into ie vestibule; a timed purge and mosphere balancing of the vesbule follows.

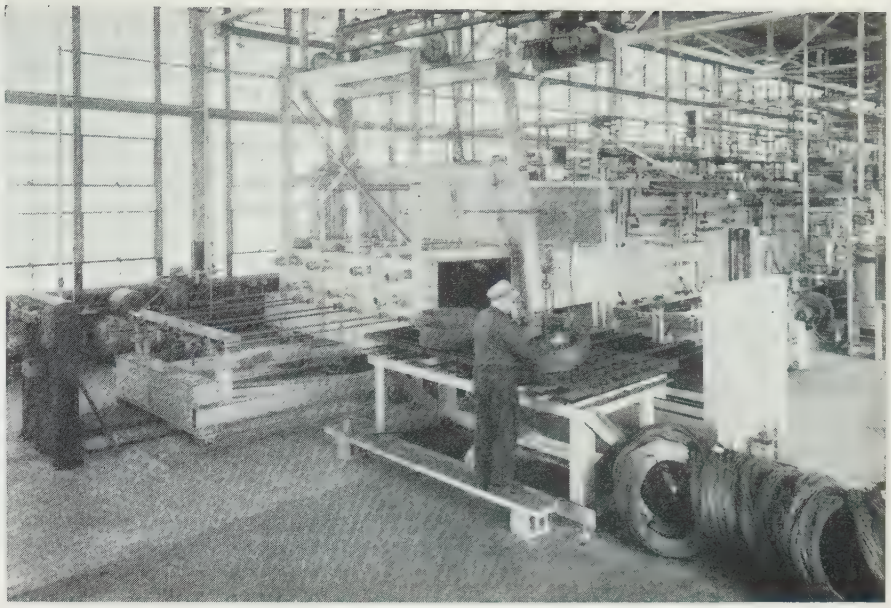
The sequence is interlocked, so iat it is impossible to push a iarge until the discharge has en completed.

Atmosphere—While the furnace uld be used for carbon-correcon annealing, Eaton uses a moded RX gas atmosphere that is lanced to maintain the carbon ntent of the steel. This is done mixing with the carburizing atosphere quantities of lean DX nerator gas to maintain a defite carbon potential level in the mosphere. The gas analysis of e atmosphere is 1.8 to 2 per nt CO_2, 16 to 17 per cent CO, per cent H_2, 0.4 per cent CH_4 a dewpoint of plus 65°F. By tering the dewpoint and the CO_2 ntent of the atmosphere, the rbon in the steel can be raised lowered.

Since some of the processes are rried out below 1400°F, the H_2O d CO_2 contents must be ineased to be in balance with the rbon in the steel. It is a prime quisite that the material must t be carburized during the analing process. In this process, e CO_2 content is high enough to measured accurately by Orsat alysis. This, of course, would t be true at carburizing temperures, e.g. 1700°F. A CO_2 anyzer-recorder is to be installed on to give the furnace operator en closer control.

One feature of charging smaller ads into this furnace is the minizing of atmosphere variation used by impurities, oxides, moisre and foreign material on the eel. The load being small in mparison with that in a bellpe furnace limits the possibility seriously affecting the atmosere gas during the heatup.

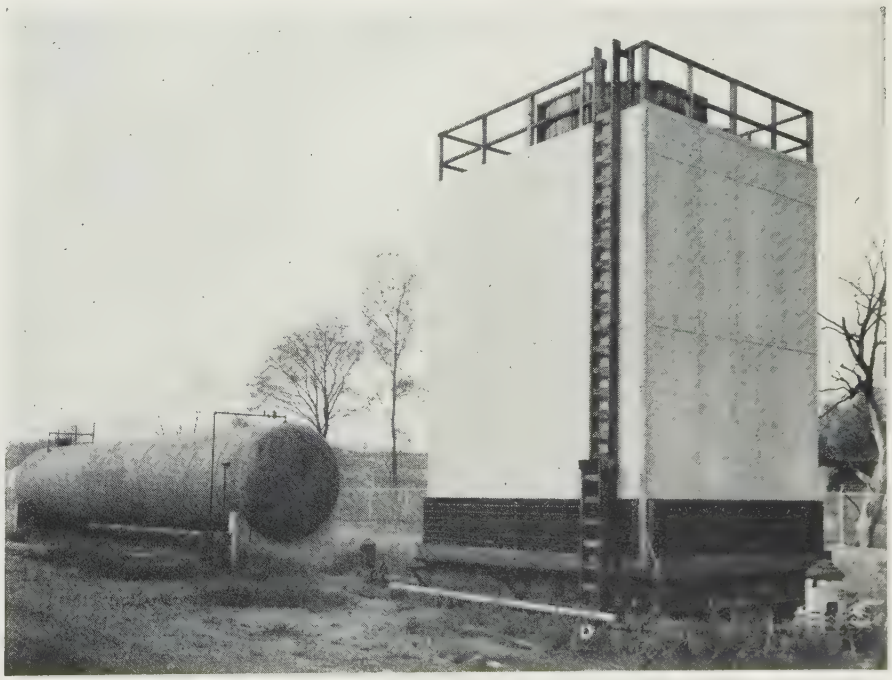
There are seven staggered ceilg fans in the furnace proper and ree pairs of fans in the cooling ne. They keep the atmosphere roughly homogeneous.



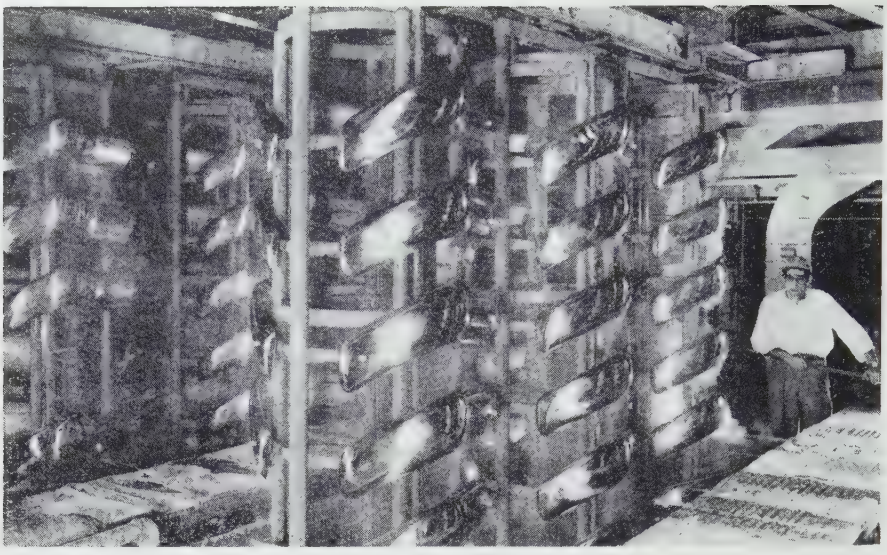
Operator is unloading wire at the discharge end of the furnace. Pull-out mechanism is at left; discharge car is in "out" position

Safety Controls—Although quantities of lean DX generator gas are mixed with RX generator gas, the furnace atmosphere could be explosive when mixed with air. Certain heat treating cycles are required in which the maximum temperature in the furnace is only 1200°F. A power failure at this low temperature normally creates explosive hazards. The equipment at Eaton is so engineered that, if power fails, nonexplosive DX generator gas automatically flows into the furnace chamber. The flow of gas pressurizes the furnace chamber, preventing air from infiltrating as the furnace cools. The DX gas is stored in a 30,000-gal tank under 150 psi pressure.

If the failure affects the RX gas generator alone, the DX generator produces enough gas to pressurize the furnace without using the gas stored in the tank. This type engineered equipment substantially eliminates the explosive hazard of using endothermic atmospheres at temperatures as low as 1200°F.



The pressure storage tank, left, contains DX gas for use in emergencies. Water cooling tower, right, supplies cooling section of furnace



Three of these lines put the gleam on bumpers . . .

One Every 3 Seconds

IF YOU had to plate 19,000 automobile bumpers every two-shift day, it would take quite a plant. Matter of fact, it probably would be the largest plating facility in the world.

Chevrolet engineers believe their new Livonia, Mich., plant qualifies for that title. Consider these statistics:

- One finished bumper every 3 seconds.
- Plant area the size of three football fields.
- Plating and storage tank capacity over 906,000 gal.
- Generated power would light 20,000 homes.
- Structural steel in machines alone would build a 38-story office building.
- Plating solution is filtered at 7000 gpm.

Completely Automated — Naturally, an operation of this magnitude is as completely automated as possible. Because of the part contours involved, there is no horizontal travel in the tanks. Each of the three machines operates on a 57-second immersion, 50-second travel cycle. Each carrier with its load of bumpers weighs about 2400 lb.

Plating times are lengthy, so when carriers reach these stages they leapfrog over earlier carriers that are already being plated and drop into the first vacant cell. At the conclusion of plating time, the carriers again must leapfrog other cells to move into the rinse stage.

Three Levels — The Chevrolet bumper has three sections (a center bar and two end wings) that are bolted together later under the bumper guards. Each carrier is composed of three racks, and each rack was designed to hold 12 end wings or 12 center bars. These are loaded in a station beneath the level of the machine.

Screw-type elevators lift each carrier to a starting position on the line from where it begins the 43-step process. All horizontal movement takes place outside the tanks. After the Perflow nickel plating cycle, the carriers are again dropped to the lower level for buffing.

They return to machine level for cleaning, chrome plating and rinsing, then drop down again to the unloading station. Empty carriers are lifted to a level above the machine where a trolley shuttle whisks them back to the starting end of the line.

Meaker Co., Chicago, supplied the three plating machines. The entire installation was designed and erected by George L. Nankervis Co., Detroit.

Sequence of Operations:

Tank	Operation
1.	Soak Clean
2.	Soak Clean
3.	Spray Rinse
4.	Cathodic Clean
5.	Spray Rinse
6.	Acid Dip
7.	Spray Rinse
8.	Anodic Clean
9.	Spray Rinse
10.	Spray Rinse
11.	Warm Acid Dip
12.	Nickel Strike
13.	Reclaim Rinse
14.	Spray Rinse
15.	Sour Rinse
	57 seconds each tank
16.	Copper Plate (3 cells)
17.	Copper Plate (3 cells)
18.	Copper Plate (3 cells)
19.	Copper Plate (3 cells)
20.	Copper Plate (3 cells)
	27 minutes total
21.	Reclaim Rinse
22.	Spray Rinse
23.	Sour Rinse
	57 seconds each tank
24.	Nickel Plate (3 cells)
25.	Nickel Plate (3 cells)
26.	Nickel Plate (3 cells)
27.	Nickel Plate (3 cells)
	20 minutes total
28.	Reclaim Rinse
29.	Spray Rinse
30.	Hot Rinse
	57 seconds each tank
31.	Soak Clean
32.	Soak Clean
33.	Spray Rinse
34.	Cathodic Clean
35.	Spray Rinse
36.	Acid Dip
37.	Spray Rinse
38.	Spray Rinse
	57 seconds each tank
39.	Chromium Plate (3 cells)
	4 minutes total
40.	Reclaim Rinse
41.	Reclaim Rinse
42.	Spray Rinse
43.	Hot Rinse
	57 seconds each tank

&L cold drawn ELECTRICWELD tubing now available with a superior SPECIAL SMOOTH I.D. finish

Reduces your over-all production sts in applications like these . . .

- **cylinder tubing**
- **hydraulic and pressure tubing**
- **shock absorbers**
- **ordnance components**

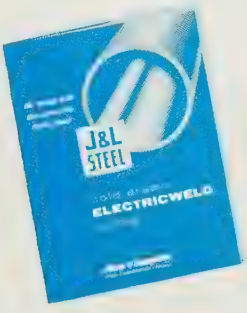
This new drawn-over-mandrel ade tubing with its mirror-like in- le surface finish is today busy help- g manufacturers reduce or entirely minate costly machining on many applications and is being substituted for more costly types of steel tubing. For example, it may be used, without inside honing, for many cylinders through which plungers are passed.

J & L Cold Drawn ELECTRIC-WELD Tubing with a *Special Smooth* ID finish combines the physical advantages imparted by today's modern electric welding techniques with those of cold working. It withstands high internal hydrostatic pressures, carries heavy torsion loads, resists high-frequency vibration, and offers a favorable weight-to-strength ratio for applications in which loading occurs in all directions.

J & L Cold Drawn ELECTRIC-WELD Tubing can be furnished in its three specifications in OD sizes from ¾-inch to 2¼ inches and in wall thickness from 20 to 10 gage, 0.035 and 0.134-inch respectively.

This new booklet provides the information you need . . . specifications . . . tolerances . . . chemistry . . . mechanical properties . . . annealing . . . finishes.

J&L STEEL



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New soaking pits go into action at August Thyssen Steelworks in West Germany as war damage is cleared away. Ingots have "passports" which indicate type of steel and profile

German Steel on the Rebound

AS WORKMEN at August Thyssen-Hutte A. G. in Duisburg, Germany, bulldoze bomb rubble and clear foundations, workmen in the plant are making steel.

Before the war, Thyssen had a blast furnace capacity of 1.4 million metric tons of steel ingots Only one blast furnace was removed in the Allied dismantling program, but the steelmaking department was stripped of seven Thomas converters, seven electric furnaces and 8 out of 12 open hearths. Only one mill stand was left.

Rolling Again—Saved from complete dismantling by the Petersberg agreement of August, 1949, Thyssen was back in operation with one blast furnace by May, 1951. Now it has one of the most modern continuous hot strip mills in Europe, built with the aid of federal and state funds and the technical assistance of the Armco Steel Corp.

The mill has a scale breaker, four roughing stands, and six finishing stands built by Demag, but equipped with Morgan bearings and Bliss downcoilers. Now being readied for operation are a Continental, 4-stand, 4-high, tandem cold mill and a Wean shear line.

Five blast furnaces are turning out 1.3 million tons of iron annually; four Thomas converters and six open hearths produce [illegible] million tons of steel. The str[illegible] mill can roll 1.5 million tons, [illegible] plans are under way to expa[illegible] steel capacity to 1.8 million ton[illegible]

Production Climbs — The pre[illegible] sure is on the entire steel indust[illegible] to get out more material for Ge[illegible] many's revitalized industry. [illegible] 1937, production was 17.5 millio[illegible] From a postwar low of 4 millio[illegible] tons, production is back this ye[illegible] to 20.5 million. Next year the go[illegible] is 22 million; in 1957, 25 millio[illegible] and in 1965, 28 to 30 million.

West Germany has 55 steel co[illegible] panies, of which 27 are considere[illegible] leading mills. Seventeen are uni[illegible] of the prewar Vereinigte Stah[illegible]

erke (VST). Under Allied de-artelization, combines were brok-n up. Some, like Thyssen, were eparated from their coal, even ough they were sitting on top of ie mines.

Combination — Now, there's a ndency to reconsolidate with per-ission of the Coal and Steel Com-unity. New combines include the annesmann and Phoenix groups. The CSC was proposed by rench Foreign Minister Robert chuman on May 9, 1950, and be-ame effective on July 23, 1952. provides a common market for al and steel without tariff bar-ers in Germany, France, Belgium, uxembourg, The Netherlands and aly, which have a combined pop-ation of 160 million.

So far, the CSC has worked to e advantage of Germany which short on steel, yet trying to care r some of its markets overseas. cluding the U. S. This year, ermany is importing 2.5 million ns of finished steel from the her CSC countries (30 times ore than in 1951 before the union ent into effect). German exports them (600,000 tons) are double ose for 1951. To all countries, ermany is shipping 2.5 million ns, up from 2.15 million in 1954

Small Orders—In the world mar ket, German mills do not consider American steel producers real competition. They point out that American companies like large orders and are not so much interested in smaller lots which fit into the marketing plans of many European mills.

Dr. Gerhard Schroeder, chairman of the Iron and Steel Association, Dusseldorf, points out the need in Germany for plates and sheets, as well as skelp for pipe. Material of this type is being imported from the U. S., but German mills are looking forward to taking care of domestic requirements. For instance, Kloeckner-Werke A. G. will build a wide strip mill at Bremen. First on the schedule is a cold-strip mill which will reduce coils imported from France and the U. S. until its own hot-strip mill is ready a year later.

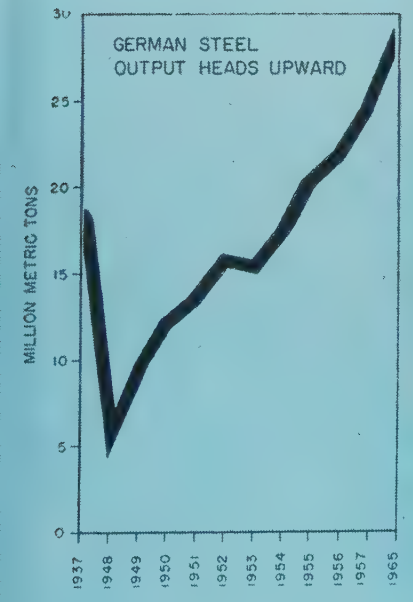
If West and East Germany are combined, Huttenwerk Salzgitter A. G. could find plenty of reason for building a strip mill. Salzgitter is a big steel plant developed in Northern Germany near Braunschweig by Herman Goering. This plant, built by H. A. Brassert, is based on local iron ore and was scheduled to have 32 blast furnaces.

Market East — Half of Salzgitter's normal market is cut off by the Iron Curtain only a dozen miles to the East. One hundred miles westward, there's competition with Ruhr mills. Salzgitter management figures there should be a market for 600,000 tons of sheets and strip a year before a strip mill can be justified. Market surveys show a potential, without East Germany, of half that.

If Salzgitter goes to 2 million tons of ingot capacity a year—and that's what its management is planning eventually—a strip mill would be added. Capacity now is 850,000 tons, but there's adequate room for expansion. Last year, a new plate mill went into operation and a continuous bar mill now is nearly ready. America is given credit for saving the steelworks from total dismantling and demolition.

Raw Materials—With prosperity and expansion, the German steel industry also is having its troubles. The great Ruhr area, where most of the steel plants are, is largely dependent upon imported iron ore. Sixty-five per cent of its ore comes from Sweden. But Sweden is short on coke, so she is holding back on ore to force Germany to step up coke shipments

In the meantime, Germany is



Salzgitter Steelworks (founded by Herman Goering and largely dismantled) is back in operation, making plates and bars from 29-30 per cent German iron ore

Choosing a stainless steel supplier is like choosing a friend; all else appearing equal, the intangibles of service and reputation stand out. Many users of stainless steel turn to B&W because they know B&W's reputation for quality and service, and because they know that B&W controls every step in the tube-making operation from pouring the stainless ingot to carefully inspecting the finished stainless tube. Because B&W quality control more than satisfies all customer and code requirements, every buyer of B&W stainless steel tubes is assured of manufacturing skill, uniformity and close tolerances in every foot of stainless tubing he acquires, and quick service via a nationwide network of B&W stainless tubing distributors.

Take a tip from the experience of thousands in the process industries, as well as architects, designers, fabricators and finishers, and get in touch with Mr. Tubes, your link to B&W, for a detailed story of the advantages of B&W stainless tubing and how you can get more for your money with stainless. *Or write for Bulletin TB 355S.*

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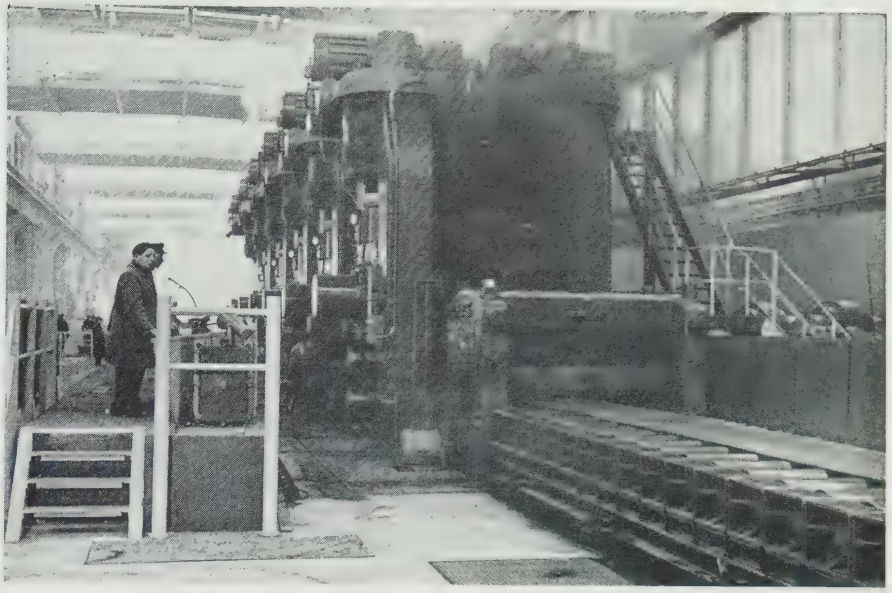
TA-5036

ot saw line in Bochumer Verein's new hloemann blooming and billet mill. ooming mill has twin drives and is pow- ed by six AEG mercury-arc rectifiers



August Thyssen bought slabs in the United States to start this new 66-in., hot-strip mill. Capacity is 1.5 million tons a year. Cold-rolled sheets and strip will be produced on Continental, 4-stand tandem mill and Wean shear line to meet growing demand of Germany's expanding metalworking industry

nched on coking coal. Coal re- erves total over 200 billion tons, ut the seams are thin and irreg- ar and at depths down to 6500 et. A third of the mines were ar damaged, and production falls ort of needs by 10 million tons. he deficit is being made up by nports from the U. S. at 20 marks ton over the local price. German ills would like to import Amer- an coke.

Germany also is getting iron ore om Norway, Spain, North Africa, outh America and Africa. Some e from U. S. Steel's Venezuelan roperties is being used, and a erman group is interested in a roperty in Newfoundland.

Local Ore — An important do- estic source for iron ore is Hut- nwerke Salzgitter. In five deep ines and one open pit, 6000 men e busy mining 18,000 to 19,000 ns a day. The ore runs only 29-30 r cent iron and is high in silica d phosphorus.

Concentrated to 40 per cent Fe, e coarser material is charged rectly into the blast furnaces. he fines are sintered. Salzgitter anagement says it is making pig on cheaper than Ruhr furnaces ing high grade Swedish ore.

In making steel, Salzgitter uses th Thomas converters and tilt- g open hearths for duplexing, us a soda ash treatment for re- ducing the phosphorus content.

Less Scrap — Scrap, too, is a headache. The CSC purchases scrap through its Brussels Scrap Association for distribution to Germany and other member countries. Substantial quantities come from the U. S. and Canada.

To decrease dependence on imported scrap, the German steel industry has set up an incentive plan for reducing the scrap-pig iron ratio in making steel. Savings are estimated at 45,000 tons a month.

There now are 103 blast furnaces in operation, compared with 84 in 1954. Two more will start soon, and two new ones will be completed in 1956.

Technical Developments — U. S. Steel, Bethlehem, Midvale and other American companies are interested in a process developed by Gusstahlwerk Bochumer Verein A. G., Bochum, for vacuum pouring high-quality, special-purpose alloy ingots for high temperature steam and other applications.

The company has two vacuum chambers (8 ft in diameter by 13½-ft high) for pouring 35-ton ingots and a third (14½-ft in diameter by 29½-ft high) for ingots up to 150 tons. The biggest vacuum ingot poured in this country weighs a little over a ton.

Director Artur Tix says Bochumer Verein has made 25,000 tons of vacuum-cast ingots and contemplates a continuous process as the next step. The method reduces oxygen, nitrogen and hydrogen and eliminates slow, costly cooling.

Low Shaft — Several companies are reported considering construction of Demag-Humboldt, low-shaft furnaces developed by Klockner-Humboldt-Deutz A. G., Cologne. A crushing, mixing and briquetting plant is needed for preparing iron ore, coal and flux. Coke oven and sintering plants are eliminated, and the furnace is a fraction of the size of conventional ones. Six low shaft furnaces are reported operating in Eastern Germany where the communists are building a new "Ruhr" in Upper Silesia.

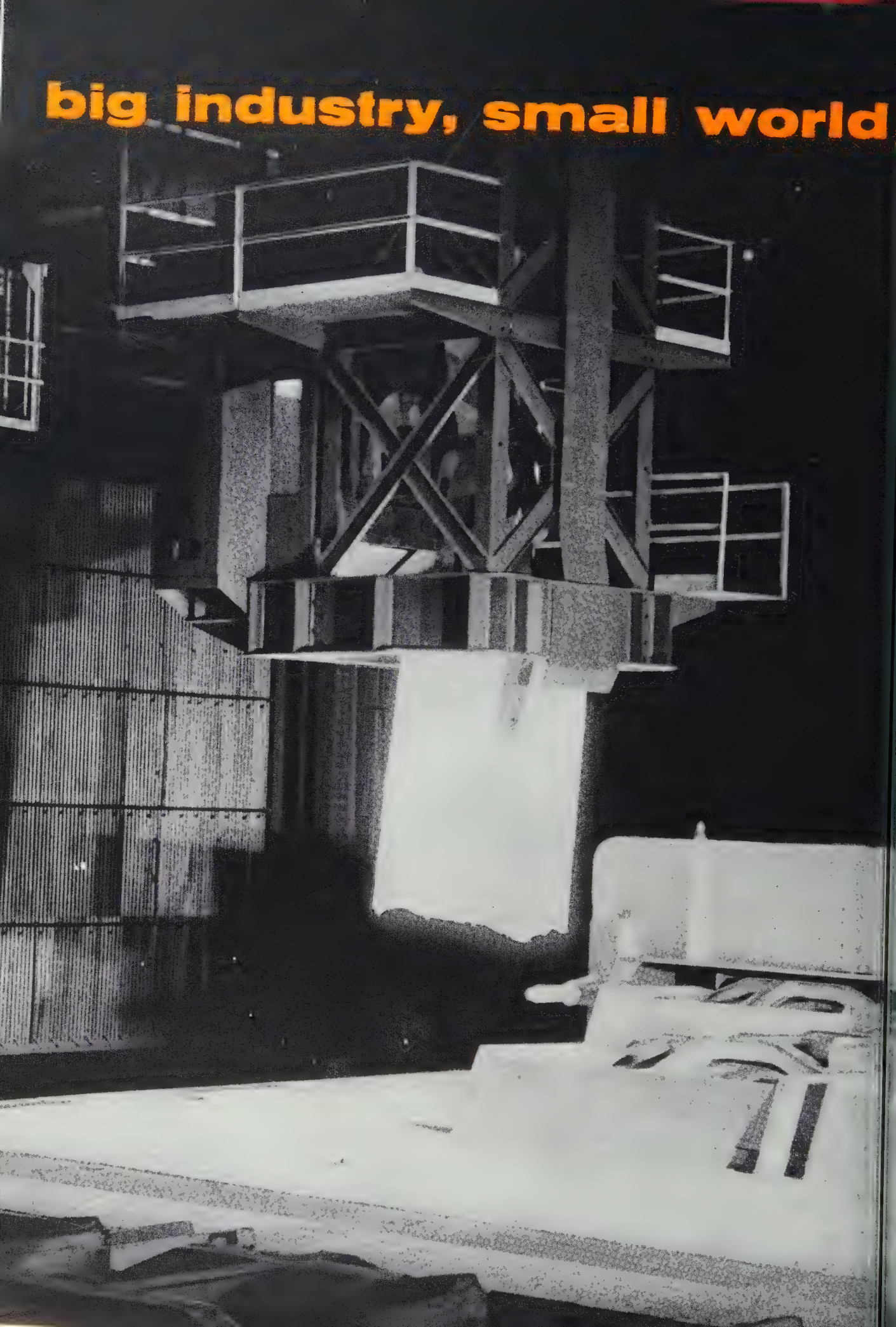
Mannesmann has a process for continuous casting of steel in billets 6 in. square, also 4 x 6 in.

• *Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department,* STEEL, *Penton Bldg., Cleveland 13, O.*

Report on Europe

Back from a six-week tour of West Europe, STEEL's editor, Irwin H. Such, reports his findings in this article, the fifth of a series.

big industry, small world

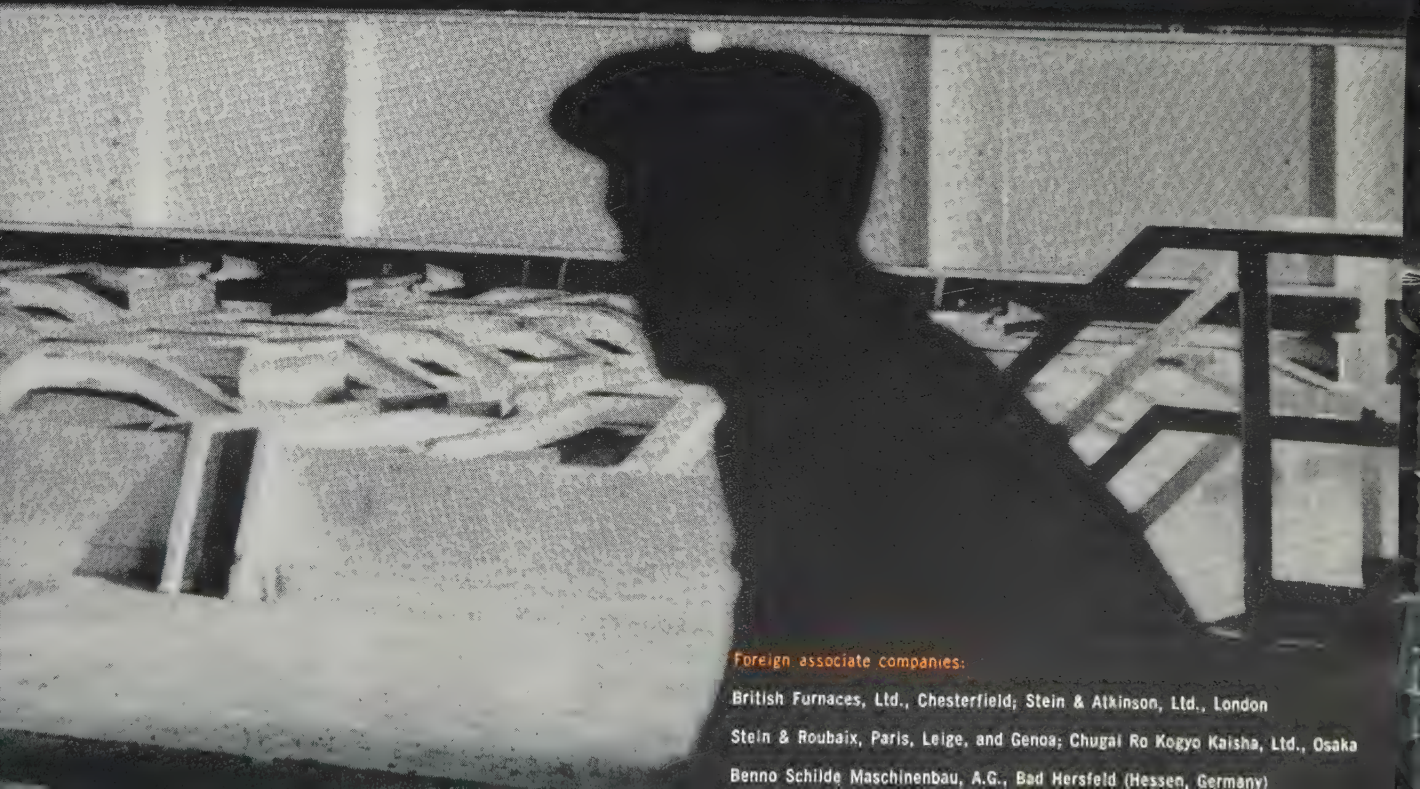


annealing covers
billet reheating furnaces, continuous
carbon restoration and annealing furnaces, continuous
controlled atmosphere generators
high-speed stress relieving furnaces
one-way fired soaking pits
pit-type annealing furnaces
slab and billet heaters, continuous
strip annealing furnaces, continuous
strip galvanizing lines, continuous
wire patenting furnaces, continuous

Wherever this steel goes—from first soak to final shipping dock—it will find that the big steel industry is a small world as far as 'Surface' equipment is concerned. Somewhere along the line, whatever its destined shape, the steel will be made more workable and more useful in 'Surface' furnaces.

Why is it so easy to bump into 'Surface' in steel mills? One reason is that 'Surface' has literally grown up with the steel industry. A better reason is the confidence that steelmakers have in the performance of furnaces and generators manufactured by Surface Combustion Corp., Toledo 1, Ohio.

Surface
STEEL MILL FURNACES



Foreign associate companies:
British Furnaces, Ltd., Chesterfield; Stein & Atkinson, Ltd., London
Stein & Roubaix, Paris, Leige, and Genoa; Chugai Ro Kogyo Kaisha, Ltd., Osaka
Benno Schilde Maschinenbau, A.G., Bad Hersfeld (Hessen, Germany)

MACHINE TOPICS

By R. F. HUBER, *Machine Tool Editor*

"I'VE GOT A VIP list that would knock your eyes out!"

That's what one big machine tool builder had to say about the success of the two-week Chicago show. His enthusiasm summed up what most exhibiting builders felt.

Soft Sell—As the doors to Chicago's huge amphitheatre closed a week ago, builders tackled the tedious job of dismantling their 170 exhibits, and readying the 917 machines for shipping. By this time builders were satisfied that the show had been a success. They talked about it in superlatives.

"Terrific," one builder claimed, "it's by far the best show we've ever seen."

Selling was soft-pedaled. The immediate payoff came in terms of interest. M. A. Hollengreen, president and general manager, Landis Tool Co., and president of the Machine Tool Builders' Association, says: "Few sales actually are consummated at an industrial exposition, such as the Machine Tool Show; but exhibitors are unanimous in the opinion that a substantial number of orders for new machines shortly will be forthcoming directly as a result of it."

Not So Fast—At least three factors kept a host of machine tools from being sold outright. One was that most visitors came looking for ideas. There were plenty to be had, but it will take some more talk and thought before the ideas can be turned into purchase orders.

A second point, maybe the most obvious, is that most machine tools aren't bought off the shelf. They require bids or quotes based on special features or attachments. Most machines require calculation and design data on tooling before the sale.

A third factor is that builders would prefer to process orders through the home office, both for record keeping and tax purposes. Illinois taxes would apply to sales completed at the show.

Here's how some companies reported show sales activity:

- Jones & Lamson Machine Co.—Good interest in all machines. Looks like the show will be directly responsible for sales of at least six machines.
- Sidney Machine Tool Co.—More sales will be directly attributable to this show than any other. Already have invitations from customers to visit their plants . . . talk over quotations.
- Landis Machine Co.—Expect at least ten sales to come from the show. Expected and got big interest in new thread rolling machine.
- Gould & Eberhardt Inc.—Terrific interest in new high-speed hobbing machines. Probably will have at least two sales come directly out of the show.

Big reason for its success: The men who came to the show represented top brass. They often are relatively inaccessible to the machine tool salesman. Here was the golden opportunity to prove to them that new machines are worth buying . . . in fact, necessities for dollar-conscious operation.

High-Speed Bendin

One new machine made possib a new line of products for fastener manufacturer

A SEMIAUTOMATIC bending m chine makes up to 1600 bends hour at the Seattle Bolt and N plant of Pacific Coast Steel Cor

The unit was designed to do better and faster job of formi eyebolts, U-bolts and hookbolt Bethlehem Pacific engineers, w were responsible for developing t unique bender, believe it to be t only one of its kind.

Lower Cost—One new produ this machine produces is a poin ed meat hook, used in the ha dling and storing of meats. R quiring two bending operation some 800 an hour can be turne out by one man.

In a third operation the sam machine (with different attac ments) puts the points on the mea hooks.

This machine has added pointe fasteners to the Seattle plant products.

HYDRAULIC BENDER
. . . speeds manufacture of fastener

Closer Tolerances—Improvemen of some products has been brough about by the hydraulic bender U-bolts can be held to closer tol erances, resulting in a more uni form product. The size range is substantial since the bender is used to work hot as well as cold steel.

Other fasteners produced on the bender include anchor bolts, culvert stitches and bent steel bars for modern wrought-iron furniture.

For JOBBING VERSATILITY plus HIGH PRODUCTION

The Fellows 36-Type Gear Shaper has tremendous 'earning power'...whether used to handle virtually every job that comes up in a small gear department...or concentrated upon the heavy work in a large production shop.

A powerful, ruggedly constructed, heavy duty machine, the 36-Type can take heavy cuts at high speed...yet hold close limits. It features quick set-up, fast gear-shift change from heavy to fine feed, and simple dial adjustment from one cutter-spindle speed to another.

Ask your Fellows man to explain *all* the profit-making advantages built into the 36-Type...as well as the Fellows Plan for deferred payment.

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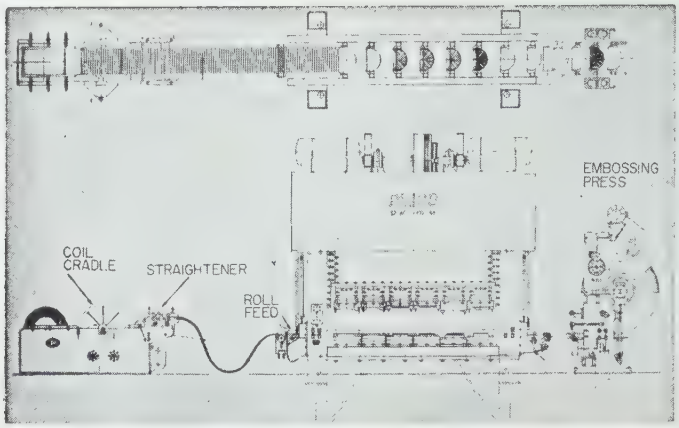
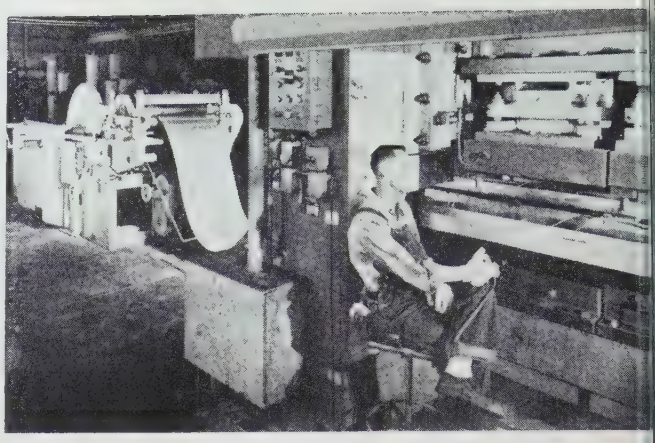
Fellows *Gear Production Equipment*



One of the two shelf-producing lines. Based on a 16-hour day and 50-minute hour, the lines will turn out 24,000 shelves a day



Line begins with standard mill coils loaded onto cradle. Once the coil is threaded through the five-roll straightener and into the roll feed, operation is automatic

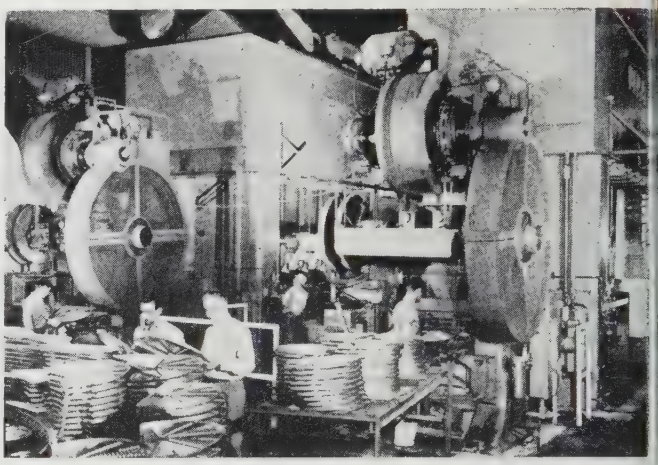
24,000 Shelves a Day

THREE transfer feed presses at Appliance Park, Louisville, produce all the refrigerator pans and shelves General Electric needs for its annual output of more than a half-million refrigerators.

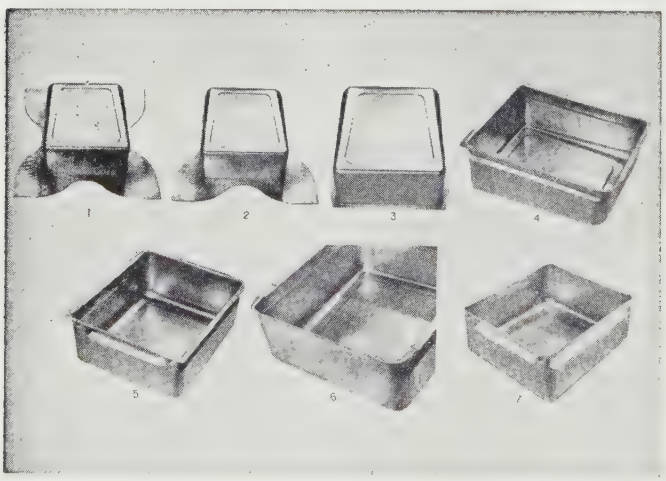
Built by E. W. Bliss Co., Canton, O., the presses have automatic coil handling equipment for producing stampings directly from mill coils.

Three Lines—Each press is in a separate line. One is a 700-ton, seven-station press that forms 12 deep-drawn refrigerator pans a minute and feeds them onto a conveyor. The other two are 800-ton, six-station units. Each of these stamps out GE's rotary and stationary refrigerator shelves at the rate of 15 a minute and feeds them into 800-ton embossing presses.

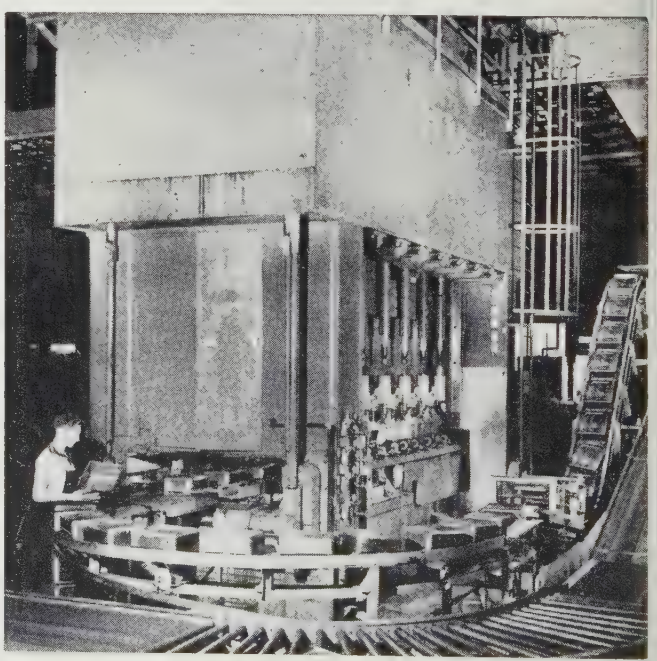
Installed cost of the five presses, automatic coil handling equipment and tooling was over $1 million. The savings they make possible are expected to bring early amortization.



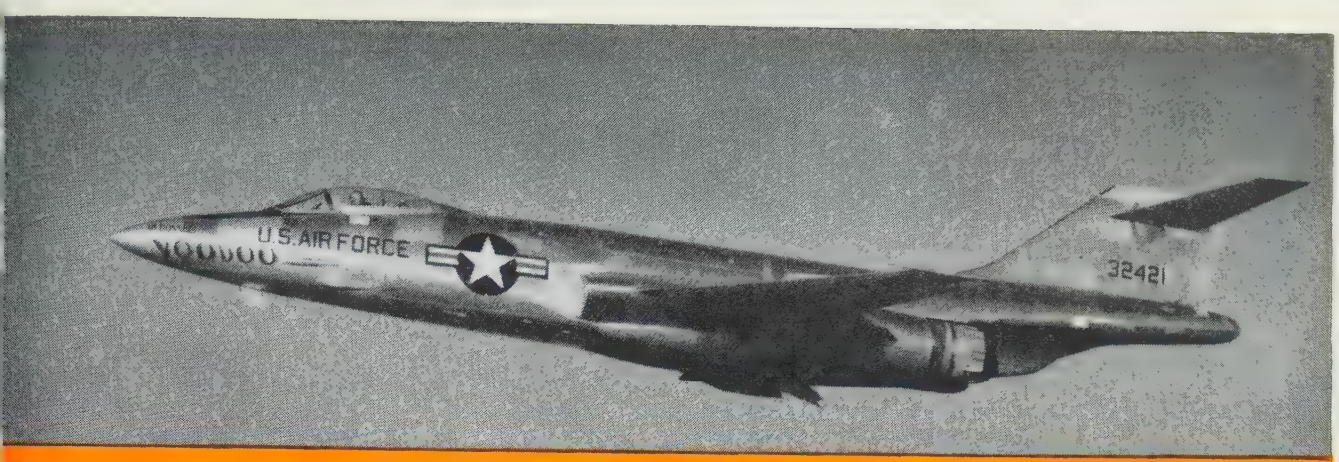
Line ends with embossing of shelves. The shelves leave the transfer feed presses and are fed automatically to the embossing presses. Unloading is by hand



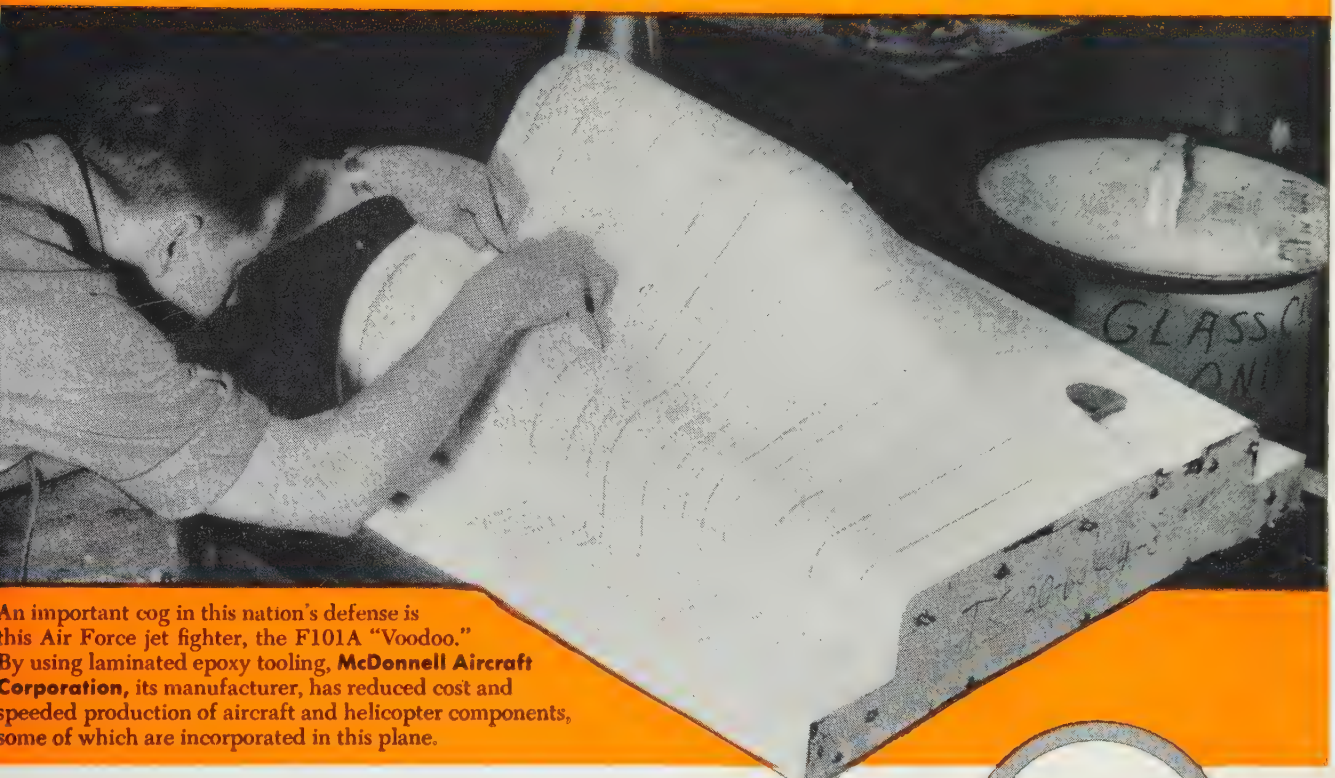
Crisper pans are made in seven steps: 1. Cutoff and draw. 2. Trim. 3. Trim. 4. Cam form sides. 5. Cam form front and pierce holes. 6. Curl flange. 7. Finish trim



An endless parade of pans, 12 every minute through two shifts, marches out of the 700-ton press and onto the conveyor. Next stop: Pickling and enameling



Compounds based on BAKELITE Epoxy Resins cut production costs, tooling time!



An important cog in this nation's defense is this Air Force jet fighter, the F101A "Voodoo." By using laminated epoxy tooling, **McDonnell Aircraft Corporation,** its manufacturer, has reduced cost and speeded production of aircraft and helicopter components, some of which are incorporated in this plane.

ster, less costly production of inter-angeable aircraft components results m the advantages of "Ren" tooling mpounds based on BAKELITE Brand oxy Resins. For instance:

Overall savings as high as 40 per cent ve resulted where tools are adaptable plastic.

Weight of plastic tools is only 25 per t that of similar steel or kirksite tools, per cent that of aluminum tools.

Savings in tooling-up time are as ch as 40 per cent when compared with conventional tooling materials.

• Up to 75 per cent of all the interchangeable door panels used in one aircraft have been assembled and coordinated with tools made of BAKELITE Epoxy Resin—glass cloth laminates.

Epoxy plastic tooling compounds enabled this aircraft manufacturer to take advantage of the savings cited above. The compounds that are used are a product of **Ren Plastics, Inc.** (formerly Ren-ite Plastics, Inc.), P. O. Box No. 1256, Lansing 4, Mich.

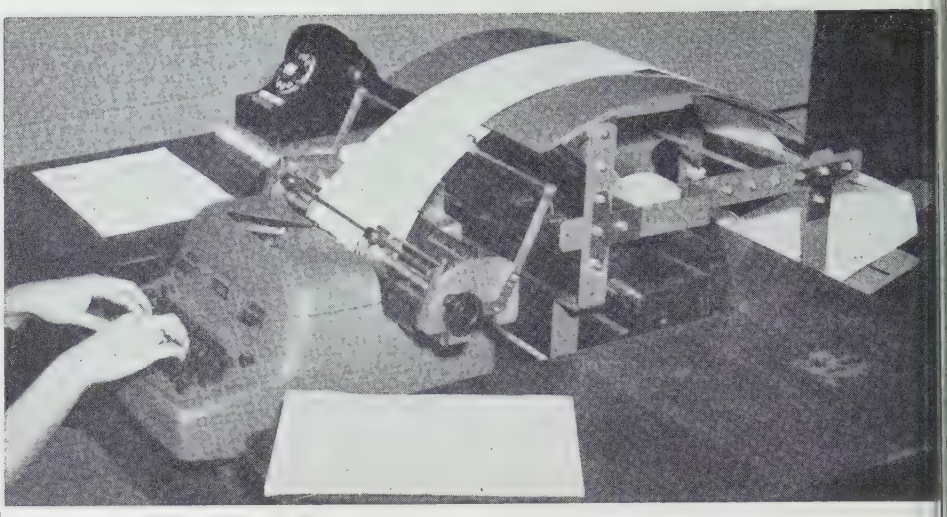
BAKELITE
BRAND
EPOXY RESINS

Visit BAKELITE's exhibit, Booth 1375, National Metal Exposition, Oct. 17-21, Philadelphia Convention Halls, Philadelphia, Pa.

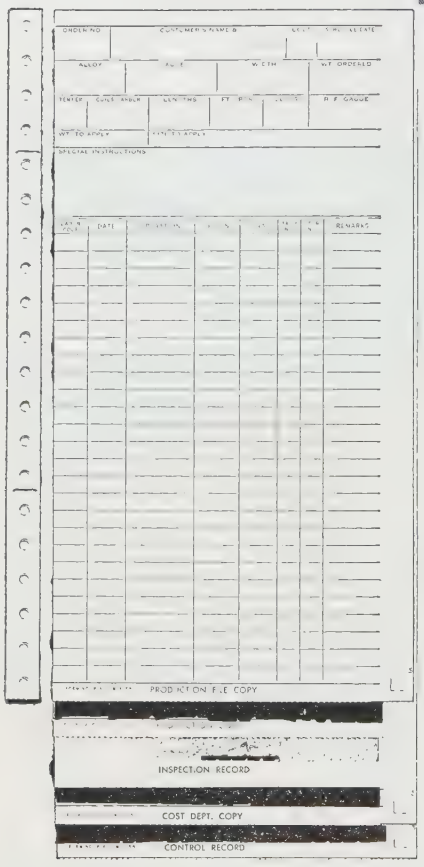
KELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

By WALTER R. LOWRY
Treasurer and Assistant Secretary
The Beryllium Corp.
Reading, Pa.



Tight Rein on Inventory



Inventory control starts with this five-part continuous form which is typed in the production control department

INVENTORY CONTROL is seldom simple. When inventory moves quickly in many directions, it's like a skittish horse. It will get out of hand unless management learns to keep a tight rein.

Beryllium Corp. faced the problem. Its relatively few alloys come in numerous forms. The starter is a master beryllium-copper alloy, which the company makes into billets. They are used to produce strip, rod and wire; or castings; or as a base for alloys of lower beryllium content. Master and other alloys also are sold as billets and ingots.

Control for Profit—Holding this inventory in line while making certain that turnover was high enough to make a profit, began to assume major proportions as business expanded. We knew that unless the method of policing inventory stayed within bearable costs, we would not realize the profit that fast turnover made available.

Our control system stresses simplicity. It depends for its success on three factors:

Speed: This is achieved by aids such as tabulating and recording machines in the shop. Equally important are the continuous forms that cut down the number of times information has to be recorded. They are color coded and carbon interleaved.

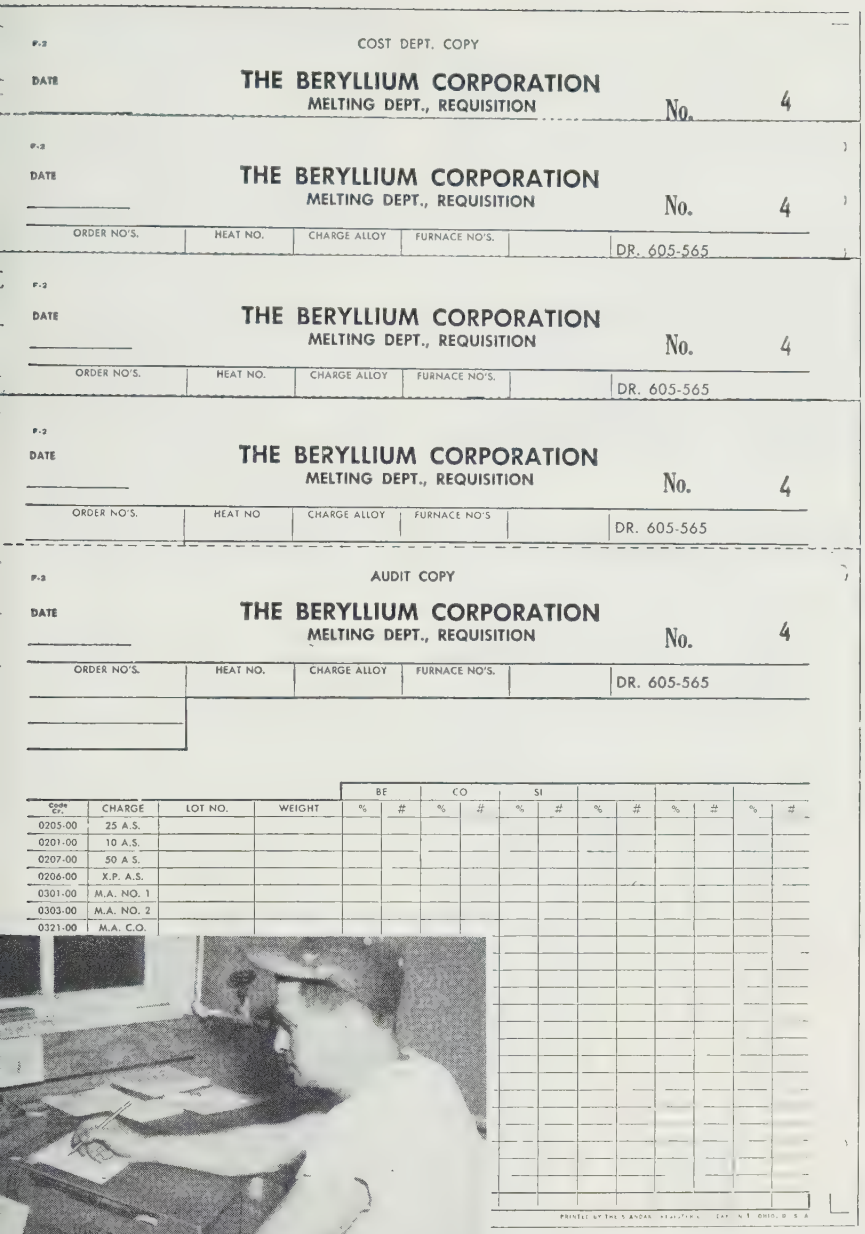
Accuracy: Educating personnel on the need for honest reporting was the first step. Carbon interleaved forms make fewer opportunities for copying errors.

Availability: There's always a copy of anything recorded locked within the recording machines. That puts the facts at management's fingertips for planning or for checking back.

Run Through—It works this way. In the production control department (heart of inventory control), a standardized form made up in several slight variations fits different types of orders. The color of the form signals whether the order is to customer specifications or a stock order—and if it is a rush order. For stock orders, the form is preprinted with standard operations.

When a customer's order is received in production control from the sales department, the base stock inventory record is consulted to set up the lead time for scheduling. Scheduling information is transmitted to the sales office concerned by teletype.

With the scheduling completed, a five-part, continuous production order is typed on an electric machine. This form carries the customer's name, order number, code, scheduled date, alloy, product specifications and the fabricating operations in sequence. A single typing of the 5¾ x 10-in. order makes five copies: Production file, production (manufacturing cost),



In the shop, forms handwritten on Carbomatic registers provide copies for departments concerned

spection record, cost department or statistical control) and control record (inventory) copies.

Routing — The production file py is held in production control r posting of weights and daily oduction information. The manucturing-cost copy and inspection py move together with the job. ey are protected by clear plas- envelopes.

The statistical control copy is ed to follow up on orders in pross. The inventory control record py is retained in the mill stockom for use by the order distcher.

Several copies are on card stock for easier handling and filing.

Handwritten Forms — Where typewriting is impractical, Standard Register Co.'s Carbomatic registers and Kant-Slip continuous forms are used. With them, clerks or foremen make handwritten reports and records. A single writing provides several control documents. All bear preprinted consecutive numbers for checking and control.

For example, in the master alloy department, a move ticket form is handwritten near the refining-melting furnace. This is a five-part form. One part on card stock has a reinforced tagcord hole in the upper right corner. This is the move ticket and stays with the job.

Move Ticket—After this form has been prepared, it is checked by the arc furnace office against the daily heat records. When an analysis is completed, results are recorded and the parts of the ticket separated and routed. One copy goes to the cost department and one is retained by the arc furnace office.

One goes to inventory control, and the move ticket stays with the melt until it goes into stock or is shipped to a customer. The fifth part is an audit copy which refolds, in a continuous, consecutively numbered strip, in a locked compartment of the register.

Another register form is used in the melting department to record the movement and analysis of ingots going from inventory into fabrication.

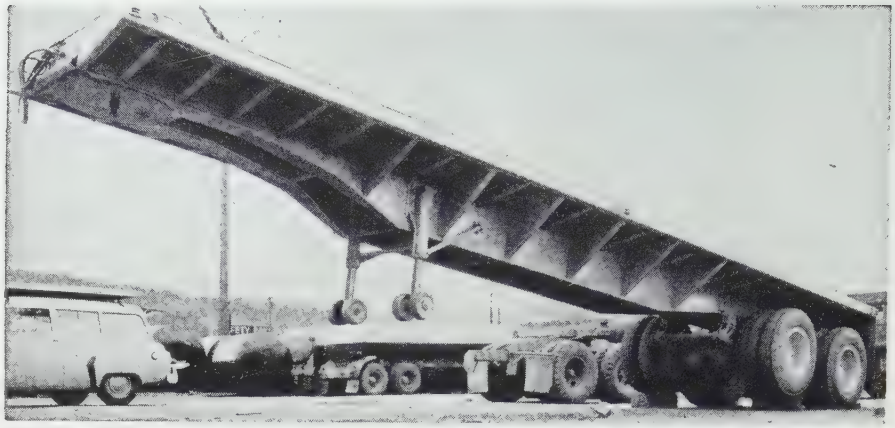
Two-in-One—A three-part form, used in the hot mill department, serves a dual purpose. The left side is the requisition form, and the right side the production record. The combined form shows the complete record of the material from the time it leaves the stock as a billet until it is returned to stock as rod or strip or is shipped. Here again, a move ticket is part of the multiple-copy form prepared by handwriting on a Carbomatic register.

In the inspection department a single writing provides a complete report of each rejection. This rejection report is a seven-part handwritten form. All copies are routed to the production office where the percentage of salvageable weight is computed.

The form is then separated and a copy goes to the foreman of the department responsible for the flaw. Other copies go to the metallurgical, quality control, production control, inspection, production and cost departments.

This integrated system of record keeping and report making has eliminated numerous posting operations and a variety of poorly designed, homemade forms. The audit copies, locked in the registers, give added assurance that the reporting which management receives from the plant is accurate and honest.

This rugged flatbed trailer points up the success of . . .



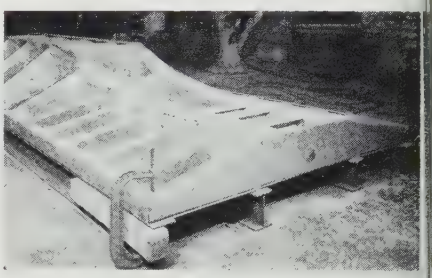
Welding Aluminum

A new, high-magnesium type alloy is welded easily by conventional semiautomatic methods

ALUMINUM alloy 5083 (a high-magnesium type) can be welded at the same speed and cost as mild steel. Applications to date: Flatbed trailers, long-span overhead cranes and boat hulls.

The prototype model of a 35-ft trailer shown in the photos was designed by Kaiser Aluminum & Chemical Corp., developer of the new alloy, and built by Beall Pipe & Tank Corp., Portland, Oreg. Now the company is fabricating production models.

Pulls Its Load—The prototype—total weight 7986 lb, payload 45,000 lb—has been in continuous service since Jan. 1, 1955, hauling pipe and structural steel over mountain highways in the Pacific Northwest. There has been no structural failure.



FORWARD TRANSITION SECTION
. . . box construction for extra strength

The trailer was welded with inert-gas, shielded-arc, consumable-electrode units. Experience during prototype production and production model runs established the economical and practical applications of the welded aluminum construction.

Fabrication—The flatbed was designed so it could be built with a minimum of production equipment (a press brake power shear and welding units). The aluminum—a total of 3120 lb—was mill cut specifically for the trailer to keep scrap loss down.

The trailer was built upside down without use of a jig. The center floor plate was clamped to a flat surface, and other parts were tack welded in place. No distortion was experienced.

olishing Wheel Removes Draw Marks

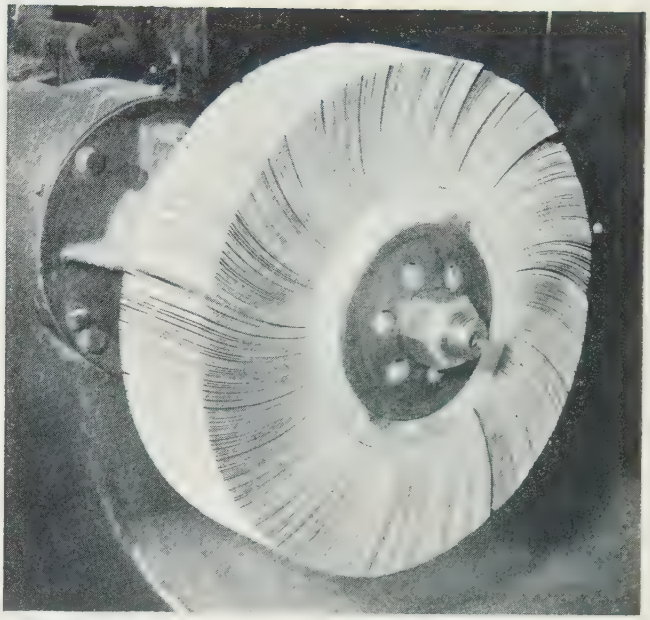
This new wheel can polish any metal for plating, inting or architectural uses. Eliminated are fine it setup wheels, rag or sisal buffs or brushes.

The wheel is made of hundreds of pieces of cloth ated abrasives that can be used on rotary or raight-line automatics, or on standard lathes for nd operations. The wheel is mounted on a hub sembly that adapts to any spindle.

Called the PG (polishing and grinding) wheel, it moves stock as part of its polishing action. This rading-polishing action and the wheel's ability to nform enable it to remove mild draw marks in the me process in which it generates a buff-type finish. Rate of cut and the microinch finish produced re- ain constant until the wheel is worn down to the ub. It is not necessary to increase arbor speed to aintain the cut.

The wheel is adaptable to hand or automatic op- ations, and it takes the shape of the part being lished. The shape remains constant during the e of the wheel.

Wheel diameters range from 14 to 17 in.; widths nge from 2 to 6 in. Wheels come in a full range polishing grits in both aluminum oxide and sili-



con carbide coatings. *Write*: Dept. A5-266, Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn. *Phone*: Tower 8511

lew Machine Does Single and Parallel Face Flat Lapping

This high production machine uses bonded abra- e wheel laps and filtered coolant. Advantages: pping action is rapid, increasing output; finished rts are ready for use; costly washing operations e eliminated; and optical flats can be used for spection because bright surfaces are produced.

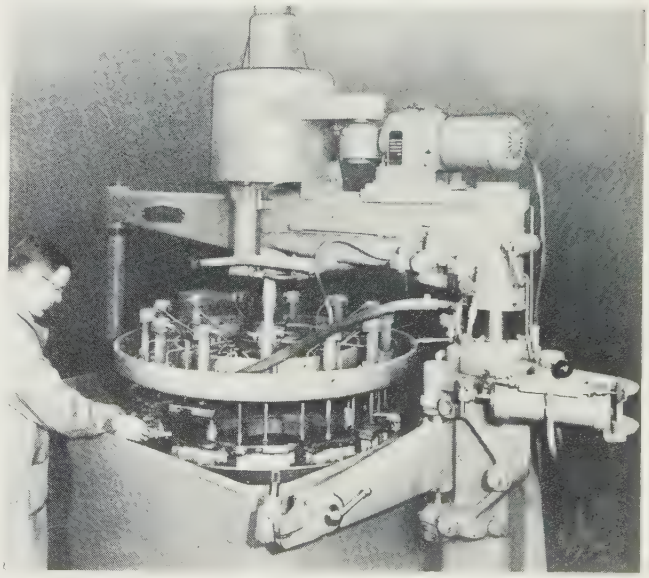
Individual adjustable speed drives for laps and rkholder give the best combination for every job.

The machine can be set for a plain timed cycle, tomatic continuous feed or semiautomatic con- uous feed.

For single-face lapping, a bonded abrasive wheel (48-in. diameter) is mounted on a rigidly sup- ted, heavy-duty, vertical spindle. Workpieces are d in suitable adapters; proper lapping pressure secured from weights or pressure devices.

The lap face is generated and kept true by a umn-mounted diamond truing arm, which is hy- ulically operated.

Opposed parallel flat faces are lapped simultane- ly. A column and overarm arrangement supports upper 48-in. diameter lap. Workpieces are held retainers between the two laps, and sizing is con- led by raising the lower lap with a "click-count" exing wheel feed. A rotating full nut engages a d screw. Both hand and power feed are provided.

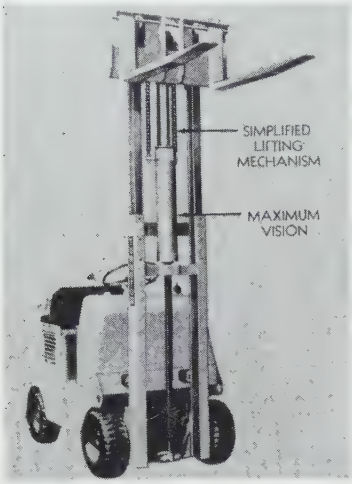


The plain timed cycle uses an electric timer. In the semiautomatic, continuous-feed arrangement, lapping is done continuously in a single pass. Automatic continuous feeding does loading and unloading with automatic handling equipment. *Write*: Norton Co., Worcester 6, Mass. *Phone*: Pleasant 2-4641

NEW PRODUCTS and equipment

High Free-Lift Mast

This assembly is optional equipment. It does not reduce the load capacity or increase the load lever arm.



Total lifts range from 74 to 144 in. for the 400-P lift truck; 72 to 216 in. for the LT-50 and LT-56; and 74 to 160 in. for the LT-35, 390, 420, 460, 500 and 500-P. *Write*: Towmotor Corp., 1226 E. 152nd St., Cleveland 10, O. *Phone*: Glenville 1-0900

Tube Marking

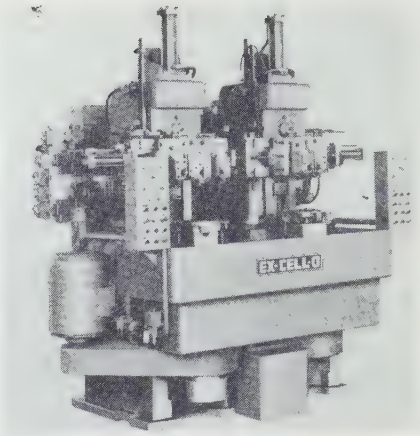
A numbering machine and an automatic cutoff are used in this automatically fed machine. Automatics can be used for consecutive numbering, nonautomatics for random numbering. Marking speed and feed are set for 86 pieces a minute. *Write*: Acromark Co., 398 Morrell St., Elizabeth, N. J. *Phone*: Elizabeth 2-6500

Vertical Boring Machine

Turning, boring, facing, grooving and chamfering are done in combinations or as separate operations.

Each of the two stations has a separate hydraulic system, counterweighted tool slide, vertical spindle, drive equipment and controls. During machining at one station, the other station can be unloaded, loaded and started on its automatic cycle.

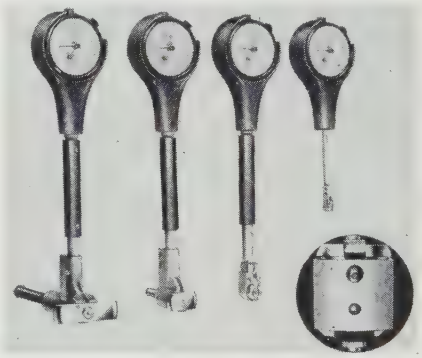
Individual controls and power equipment prevent the operation



of one station affecting the other. *Write*: Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich. *Phone*: Townsend 8-3900

Hole Gages

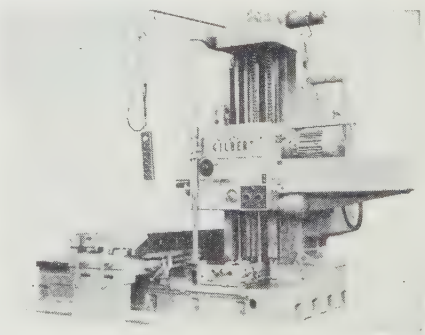
This series of adjustable dial gages checks hole diameters between ½ and 8 in. Maximum gaging size for each is twice its minimum. The gage is fully insulated, and the heat of the operator's hand cannot affect its accuracy. Inser-



tion of the gage is fast and practically foolproof. *Write*: Federal Products Corp., 1144 Eddy St., Providence 1, R. I. *Phone*: Stuart 1-9300

Boring Mills

This high-speed, 4 and 4½-in. table-type, horizontal boring, drilling and milling machine has pen-

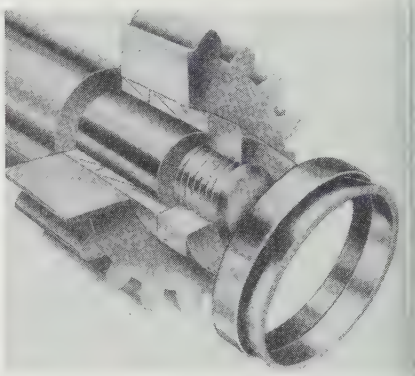


dant control and preselective power shift of feeds and speeds.

Other features: Spindle speed up to 1500 rpm, a built-in reversible motor and wide range of column heights, table sizes and bed lengths. *Write*: Cincinnati Gilbert Machine Tool Co., 3366 Beekman St., Cincinnati 23, O. *Phone*: Kirby 4815

Hub Fastener

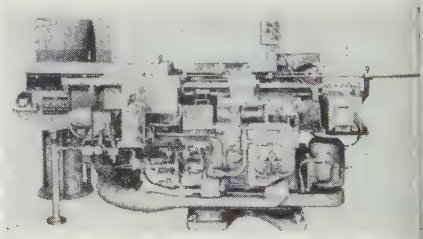
Here is a way to fasten hubs onto a shaft without the use of splines or keyways. The new element is wedged between hub and shaft under heavy pressure applied by hand tools. The outer ring expands and the inner ring contracts.



Maximum torque for a given shaft diameter is transmitted because full strength of both hub and shaft are used. The assembly consists of a straight cylindrical shaft and hub bore. Stress concentrations are eliminated and tolerances are liberal. *Write*: U. S. Automatic Corp., Amherst, O.

Piston Balancing Machine

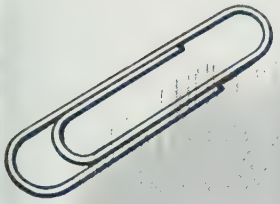
This automated machine receives, weighs, sorts, positions, clamps, machines and discharges



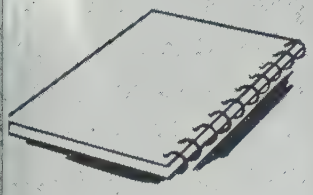
pistons at rates up to 720 an hour.

Pistons are machined to a tolerance of plus or minus 1 gram. Pistons grossly overweight or underweight are rejected from the machine.

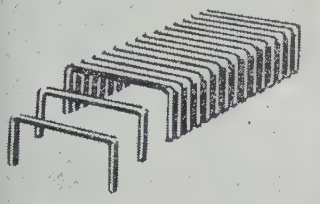
Other new machines include 13



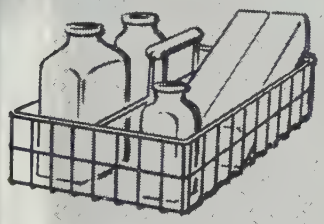
WIRE FOR PAPER CLIPS



COIL BINDING WIRE



PREFORMED STAPLE WIRE



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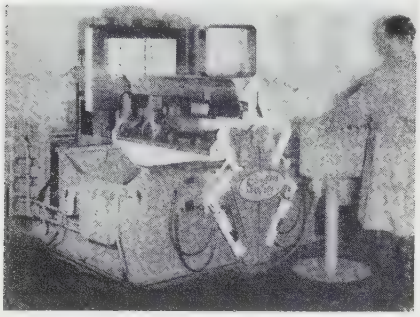
and 15-in. column radial drills and a multiple drilling machine that drills, burrs, reams, taps and spotfaces 375 carburetor air horns an hour. *Write*: Morris Machine Tool Co., 933-36 Harriet St., Cincinnati, O. *Phone*: Parkway 1-5616

Bending Machines

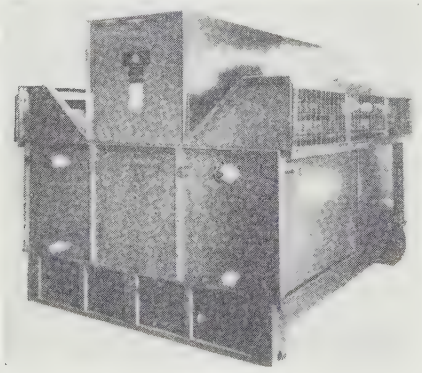
Radius bends up to 4 in. are made by adjustable tangent bending machines. Standard models come in 24, 36 and 48-in. width handling capacities.



Tooling can be applied for crowning and making upset and stretch flange radius bends. Refrigeration components, unit and space heater housings, TV and radio cabinets, electrical switch control and capacitor boxes, metal furniture components, water coolers, air conditioning units—all can be made with this unit. It comes in single wing, duplex and quadruplex types. *Write*: Titusville Divisions, Struthers Wells Corp., Titusville, Pa.

Industrial Cooling

This heat exchanger gives temperature control within 2°F and saves water. It cools by evaporation; modulating the use of outdoor air controls the temperature.



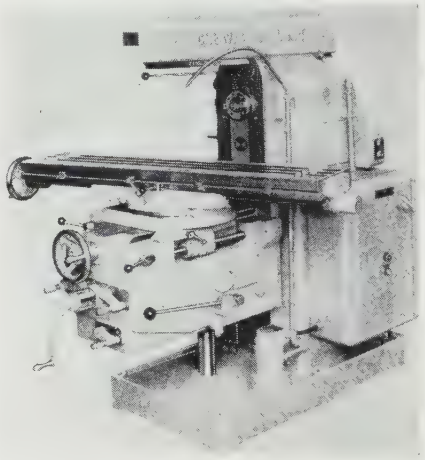
The fluid to be cooled flows through parallel coil sections that are kept drenched with a water spray. About 1000 Btu are transferred for every pound of water evaporated.

If heating (instead of cooling) is needed, it is provided by a steam or electric heater in the spray water tank.

There are four sizes; capacities range from 7 million to 18 million Btu an hour. They weigh from 9300 to 20,500 lb. *Write*: Niagara Blower Co., 405 Lexington Ave., New York 17, N. Y. *Phone*: Murray Hill 6-5363

Horizontal Milling Machine

Power losses in driving mechanisms are eliminated in this milling machine. A separate drive motor mounted in the knee provides power for the knee, saddle and table. The column-mounted motor powers the horizontal spindle.

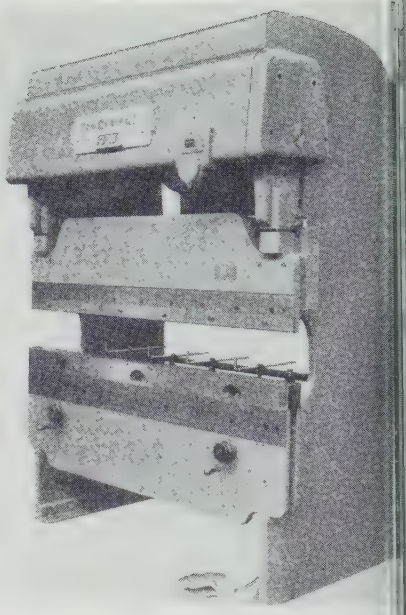


Vertical table travel is 20 in. Power controls are centralized for all directional feeds. Feed change controls are mounted on the front of the knee. A pushbutton controls spindle rotation direction. *Write*: Greaves Machine Tool Division, J. A. Fay & Egan Co., 2011 Eastern Ave., Cincinnati 2, O. *Phone*: Plaza 1-0730

Press Brakes

Here are two new press brakes that have front controlled, variable speed drives.

The 2-30 press brake (illustrated) has a capacity of 30 tons and will bend 6 ft of 14-gage mild steel. It has a 2½-in. stroke, a 9-in. gap and a 4-in. manual ram adjustment.



The 3-50 unit has a capacity of 50 tons and will bend 6 ft of 10 gage mild steel. It has a 3-in. stroke, a ram power adjustment of 5 in. and a 12-in. gap. *Write*: Cincinnati Shaper Co., Hopple-Garrard & Elam St., Cincinnati 25, O. *Phone*: Kirby 1-5010

Plating Tanks

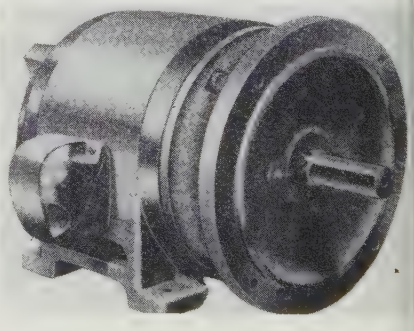
Fiberglass plastic tanks for corrosive service feature reinforcement at point-of-stress concentration. Interiors have a smooth resin surface. Heavy glass cloth and glass fiber mat are used as reinforcement throughout.

Round, square and rectangular tanks are available—from a 6-in. cube to a tank 14 x 5 x 4 ft. *Write*: Valco Corp., 1715 Roblyn Ave., St. Paul 4, Minn. *Phone*: Geneva 6449

Horizontal Motors

Here is a new, 1-to-30 hp line of motors built to the rerated NEMA specs for direct connection to equipment. Style C or D (illustrated) mounting brackets are available.

The integrally cast frame is heat treated to prevent warpage. Wind-

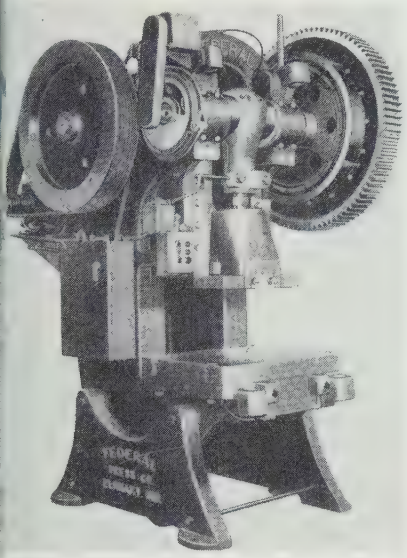


NEW PRODUCTS and equipment

igs are asbestos protected. Rotors re cast solid and dynamically balnced. *Write*: U. S. Electrical Mors Inc., Box 2058, Los Angeles 4, Calif. *Phone*: Adams 3-3131

00-Ton Press

This new press combines precion operation with high speed and aximum safety.



Electropneumatic control prodes finger-tip starting and stopng. The press may be singleipped (by hand or foot control), ched or operated continuously. It is equipped with an air-actued clutch. Safety feature: Twin lenoid valves. *Write*: Federal ress Co., Elkhart, Ind. *Phone*: unlop 2-5115

urret Lathe

New features of this universal ddle-type machine improve proction through correct cutting eed control, reduced operator fague and reduced machine haning idle time.

The machine has a motor inxed turret and pushbutton conol of spindle and turret speeds. A 40-hp, single-speed motor provides the power. The 32-speed headstock has two ranges, each with 16 forward and reverse speeds.

Another new turret lathe is completely controlled by a punched tape. Its cycling is automatic. *Write*: Jones & Lamson Machine Co., Springfield, Vt. *Phone*: Turner 5-2121

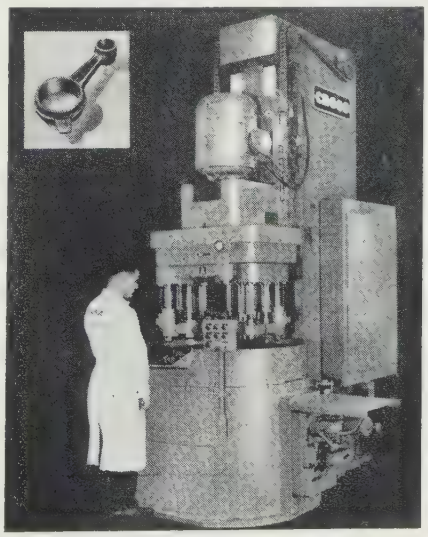
Aluminum Sealer

This product produces a chromate film on aluminum that gives excellent corrosion protection. It also serves as a paint base.

Used where hardness is not a prime factor, it has a salt spray resistance up to 600 hours. The sealer is applied easily in one dip at room temperatures. It adheres well and does not leach easily. It can be dyed in pastel colors. *Write*: Chemical Corp., 54 Waltham Ave., Springfield, Mass. *Phone*: Republic 9-5601

Connecting Rod Machine

This machine processes connecting rods used in air conditioning units. It can handle four rods with different center distances and machine two sizes of rods in the same setup.



Production is 164 pieces an hour at top efficiency. Operations include drilling and reaming the wrist pin and crank pin holes.

There are four stations—one for loading and unloading, three working. A fluid motor operates the index table. *Write*: Cross Co., Detroit 7, Mich. *Phone*: Walnut 1-3000

NEW literature

Write directly to the company for a copy

Sheet and Strip Steel

This buyer's guide lists more than 20 kinds of flat-rolled steel furnished in coils, stock sizes and blanks. It gives suggestions for stock selection and buying—bulletin 20-1, 8 pages. Joseph T. Ryerson & Son Inc., Box 8000-A, Chicago 80, Ill.

Deburring

A machine for production deburring and chamfering of internal gears is described—bulletin 103-103, 2 pages. Modern Industrial Engineering Co., 14230 Birwood Ave., Detroit 38, Mich.

Sheet Grabs

These hand and motor-operated devices lift from ½ to 50 tons—4 pages. Mansaver Industries Inc., 3105 East St., New Haven 11, Conn.

Part Winding Motors

Current and torque data for 5 to 200-hp motors suited for normal and high torque applications are given—bulletin PW-1. Howell Electric Motors Co., Howell, Mich.

Forging Hammers

Cushioned helve, upright helve, upright strap and compact hammers are covered—catalog 155, 18 pages. C. C. Bradley & Son, Cortland, N. Y.

Finishing Diecastings

Recommendations give type of wheel or buff, operations required, wheel speed and abrasives needed—bulletin PP-125. Frederic B. Stevens Inc., Detroit 16, Mich.

Expanded Metals

Standard and flattened stainless steel and aluminum are described in separate bulletins—4 pages. Penn Metal Co. Inc., 205 E. 42nd St., New York 17, N. Y.

Loading

Specific loading problems and their solution are illustrated—4 pages. Materials Handling Division, Magnesium Co. of America, East Chicago 19, Ind.

Conveyor Guide

Descriptions and illustrations tell when to use pre-engineered conveyor units—20 pages. Lamson Corp., Syracuse 1, N. Y.

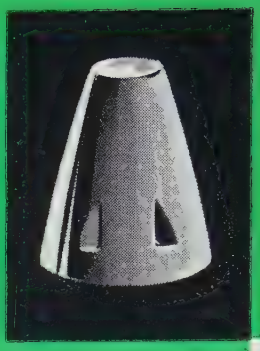
Why deep draws with

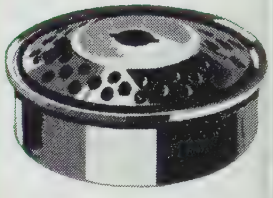
Weirzin

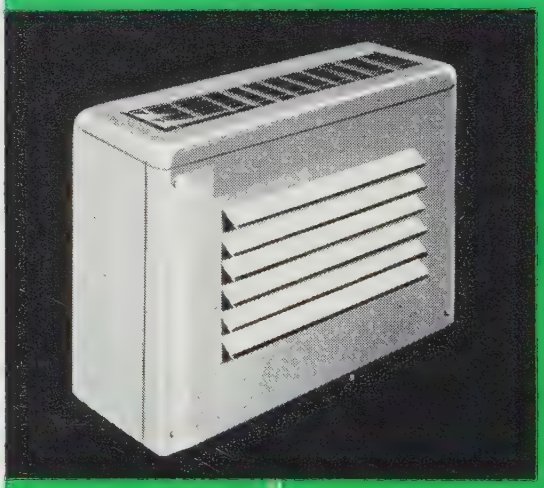
ectrolytic zinc-coated sheets

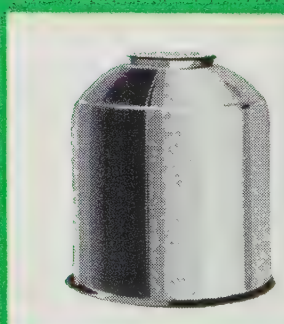
provide important

nanufacturing economies









Because Weirzin has been proved to retain its amazingly uniform protective coating under extreme fabricating operations, it is specified by leading manufacturers for a wide variety of products.

Drawing and forming are performed rapidly, with complete absence of flaking, cracking, or peeling. Inventory losses due to rust are materially reduced. Heat and moisture are successfully resisted. Absence of underfilm corrosion assures not only longer life, but also adherence of paint, lacquer, enamel and lithograph ink. And, for even longer adhesion, chemically treated Weirzin is available.

When the job calls for difficult deep draws, specify Weirzin and enjoy the double advantage of quality and economy.

WEIRTON STEEL COMPANY

Weirton, West Virginia

NATIONAL STEEL CORPORATION

WEIRTON STEEL COMPANY

Market Outlook

RDER PLACEMENT continues to be a major ncern of steel buyers. They want to keep on oducers' order books as far ahead and for as uch tonnage as possible.

That will be their policy as long as steel de- and keeps its present strength. That will be eir policy even though they don't need all of e steel they're getting.

In the Detroit area, a consumer was able to ck up 100 tons of sheets which another con- mer received but didn't need. With steel in er-all strong demand, everyone will take all he n get from the mills just so he will have nnage in case he needs it. And in most cases needs it.

G PUSH—Automobile producers, expecting les of 1956 models to start off fast, are amoring for all the steel they can get for urth-quarter delivery. But with the fourth- arter filled, except for a few isolated cases, tention is being focused on the first quarter. s mills don't know how much order carry-over ey'll have from the fourth quarter, they're ing cautious in their bookings for the first. ills hope, though, they can be fairly current at e turn of the year. They're counting on their urth-quarter shipments to be bigger than their der intake for that period.

IGH AND STEADY—Mill shipments will be g if they can keep up their production pace. the week ended Oct. 2, production maintained e same rate as in the preceding week—96 per nt of capacity.

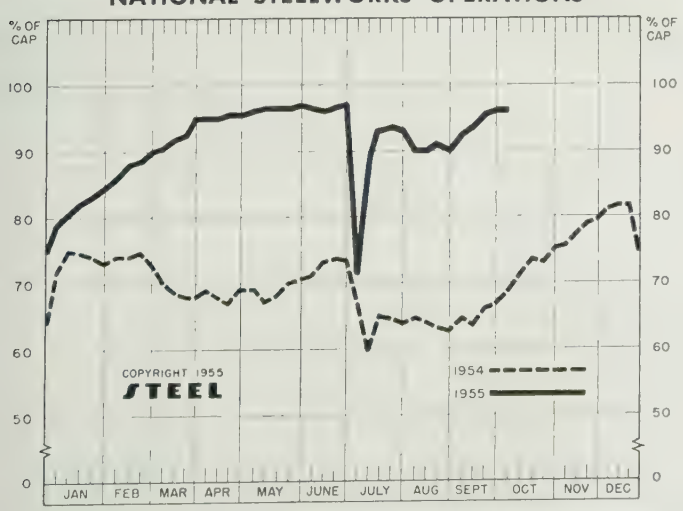
UNNING AHEAD—Preliminary production gures show September output of steel for in- gots and castings was 9.8 million tons, highest since May's 10.3 million tons. That would give a total of 85.7 million tons for the first nine months of this year. Even though the third quarter saw production losses from vacations, hot weather and a brief strike of steelworkers, the period's output exceeded that of the first quarter. Quarterly output of steel for ingots and castings was: First, 27.3 million tons; second, 29.9 million tons; and third, 28.5 million.

UP TO INDUSTRY—Rejection by the Office of Defense Mobilization of proposals for fast tax amortization of steel ingot capacity expansions is not to be interpreted as government belief there is sufficient steel capacity. The rejection means only that ODM thinks there are enough facilities to meet mobilization needs. Arthur S. Flemming, mobilization director, says it is the responsibility of private industry to provide capacity to meet the rising level of civilian demand.

WANTED: PLATES—One area where the government recognizes a shortage of capacity for mobilization is in heavy steel plates. Fast amortization is still permitted for them. Right now, the plate supply is far behind demand. They're wanted by the construction industry, line pipe producers and railroad carbuilders. Shipbuilders' needs are rising and will be felt even more strongly after the turn of the year.

PRICES—Steel prices are unchanged, except for tin mill products. They rose Oct. 1, and did not affect STEEL's finished steel price composite for the week ended Sept. 28. Composite for that week was $127.41 a net ton.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Oct. 2	Change	Same Week 1954	Same Week 1953
Pittsburgh	99	— 0.5	69	100
Chicago	96	— 1.5*	71	98.5
Mid-Atlantic	94	+ 1	58	97
Youngstown	100	0	57	105
Wheeling	97.5	+ 1	86.5	97.5
Cleveland	98.5	— 2*	77.5	93.5
Buffalo	105	0	66	106.5
Birmingham	95.5	0	71	96.5
New England	88	0	48	82
Cincinnati	87	+ 2	64	85
St. Louis	88.5	— 4	69	96
Detroit	98.5	+ 3.5	75	101.5
Western	99	+ 5	87	103
National Rate	96	0	68.5	95

INGOT PRODUCTION‡

	Week Ended Oct. 2	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	144.2†	144.4	140.4	104.5
NET TONS (In thousands)	2,316†	2,320	2,255	1,678

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

orking Outlook—p. 31

Technical Outlook—p. 69

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Sept. 27 1955	Sept. 20 1955	Month Ago	Sept. Average
(1947-1949=100)	153.9	153.9	153.9	153.9

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 27

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parenthesis. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.800	Sheets, Electrical	$10.200
Rails, Light, 40 lb	6.217	Strip, C.R., Carbon	7.993
Tie Plates	5.625	Strip, C.R., Stainless, 430 (lb)	0.444
Axles, Railway	8.000	Strip, H.R., Carbon	5.350
Wheels, Freight Car, 33 in. (per wheel)	52.50	Pipe, Black, Buttweld (100 ft)	16.366
Plates, Carbon	4.950	Pipe, Galv., Buttweld (100 ft)	19.971
Structural Shapes	4.867	Pipe, Line (100 ft)	158.925
Bars, Tool Steel, Carbon (lb)	0.460	Casing, Oil Well, Carbon (100 ft)	165.120
Bars, Tool Steel Alloy, Oil Hardening Die (lb)	0.560	Casing, Oil Well, Alloy (100 ft)	244.670
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.185	Tubes, Boiler (100 ft)	39.470
Bars, Tool Steels, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.680	Tubing, Mechanical, Carbon	20.980
Bars, H.R., Alloy	9.375	Tubing, Mechanical, Stainless, 304 (100 ft)	178.897
Bars, H.R., Stainless, 303 (lb)	0.450	Tin Plate, Hot-dipped, 1.25 lb	8.533
Bars, H.R., Carbon	5.350	Tin Plate, Electrolytic, 0.25 lb	7.233
Bars, Reinforcing	5.313	Black Plate, Canmaking Quality	6.333
Bars, C.F., Carbon	8.660	Wire, Drawn, Carbon	8.575
Bars, C.F., Alloy	12.175	Wire, Drawn, Stainless, 430 (lb)	0.578
Bars, C.F., Stainless, 302 (lb)	0.468	Bale Ties (bundle)	6.473
Sheets, H.R., Carbon	5.145	Nails, Wire, 8d Common	8.618
Sheets, C.R., Carbon	6.239	Wire, Barbed (80-rod spool)	7.847
Sheets, Galvanized	7.690	Woven Wire Fence (20-rod roll)	18.635
Sheets, C.R., Stainless, 302 (lb)	0.588		

STEEL's FINISHED STEEL PRICE INDEX*

	Sept. 28 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	207.63	207.63	207.63	194.19	156.99
Index in cents per lb	5.625	5.625	5.625	5.261	4.253

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$127.41	$127.41	$127.41	$117.77	$94.50
No. 2 Fdry, Pig Iron, GT	58.99	58.99	58.99	56.54	48.84
Basic Pig Iron, GT	58.49	58.49	58.49	56.04	47.72
Malleable Pig Iron, GT	59.77	59.77	59.77	57.27	49.13
Steelmaking Scrap, GT	45.00	44.33	43.83	30.50	41.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as o wise noted. Delivered prices based on nearest production point

FINISHED STEEL	Sept. 28 1955	Week Ago	Month Ago	Year Ago	5
Bars, H.R., Pittsburgh	4.65	4.65	4.65	4.30	
Bars, H.R., Chicago	4.65	4.65	4.65	4.30	
Bars, H.R., deld. Philadelphia	4.90	4.90	4.90	4.55	
Bar, C.F., Pittsburgh	5.90	5.90	5.90	5.40	4.10
Shapes Std., Pittsburgh	4.60	4.60	4.60	4.25	
Shapes, Std., Chicago	4.60	4.60	4.60	4.25	
Shapes, deld., Philadelphia	4.88	4.88	4.88	4.53	
Plates, Pittsburgh	4.50	4.50	4.50	4.225	
Plates, Chicago	4.50	4.50	4.50	4.225	
Plates, Coatesville, Pa.	4.50	4.50	4.50	4.225	
Plates, Sparrows Point, Md.	4.50	4.50	4.50	4.225	
Plates, Claymont, Del.	4.50	4.50	4.50	4.225	
Sheets, H.R., Pittsburgh	4.325	4.325	4.325	4.05	
Sheets, H.R., Chicago	4.325	4.325	4.325	4.05	
Sheets, C.R., Pittsburgh	5.325	5.325	5.325	4.95	
Sheets, C.R., Chicago	5.325	5.325	5.325	4.95	
Sheets, C.R., Detroit	5.325-5.425	5.325-5.425	5.325-5.425	5.10	
Sheets, Galv., Pittsburgh	5.85	5.85	5.85	5.45	
Strip, H.R., Pittsburgh	4.325	4.325	4.325	4.05	
Strip, H.R., Chicago	4.325	4.325	4.325	4.05	
Strip, C.R., Pittsburgh	6.25-6.45	6.25-6.45	6.25-6.45	5.75	4.15
Strip, C.R., Chicago	6.35-6.45	6.35-6.45	6.35-6.45	6.00	
Strip, C.R., Detroit	6.35	6.35	6.35	5.60-5.90	4.35
Wire, Basic, Pittsburgh	6.25	6.25	6.25	5.75	
Nails, Wire, Pittsburgh	7.60	7.60	7.60	6.85	
Tin plate (1.50 lb), box, Pitts.	$9.05	$9.05	$9.05	$8.95	$
SEMIFINISHED STEEL					
Billets, Forging, Pitts. (NT)	$84.50	$84.50	$84.50	$78.00	$
Wire rods, $\frac{7}{32}$-$\frac{5}{8}$" Pitts.	5.025	5.025	5.025	4.675	
PIG IRON, Gross Ton					
Bessemer, Pitts.	$59.50	$59.50	$59.50	$57.00	$4
Basic, Valley	58.50	58.50	58.50	56.00	4
Basic, deld. Phila.	59.16	59.16	59.16	49.66	5
No. 2 Fdry, Pitts.	59.00	59.00	59.00	56.50	4
No. 2 Fdry, Chicago	59.00	59.00	59.00	56.50	4
No. 2 Fdry, Valley	59.00	59.00	59.00	56.50	4
No. 2 Fdry, deld. Phila.	59.66	59.66	59.66	50.16	5
No. 2 Fdry, Birm.	55.00	55.00	55.00	52.88	4
No. 2 Fdry (Birm.) deld. Cin.	62.70	62.70	62.70	60.43	5
Malleable, Valley	59.00	59.00	59.00	56.50	4
Malleable, Chicago	59.00	59.00	59.00	56.50	4
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	190.00†	17

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$43.50	$43.50	$43.00	$30.50	$4
No. 1 Heavy Melt, E. Pa.	46.50	46.50	46.50	29.00	3
No. 1 Heavy Melt, Chicago	45.00	43.00	42.00	32.00	4
No. 1 Heavy Melt, Valley	46.50	46.50	46.50	32.50	4
No. 1 Heavy Melt, Cleve.	44.00	44.00	44.00	30.50	4
No. 1 Heavy Melt, Buffalo	38.50	38.50	39.50	28.50	4
Rails, Rerolling, Chicago	64.50	64.50	64.50	51.50	6
No. 1 Cast, Chicago	47.50	47.50	46.50	38.50	5
COKE, Net Ton					
Beehive, Furn, Connlsvl.	$13.625	$13.625	$13.625	$14.75	$1
Beehive, Fdry, Connlsvl.	16.50	16.50	16.50	16.75	1
Oven, Fdry, Chicago	25.75	25.75	25.75	24.50	2

Daily Nonferrous Price Record

	Price Sept. 28	Last Change	Previous Price	Aug. Avg.	July Avg.	Sept. 1954 Avg.
Copper	43.00–50.00	Sept. 12, 1955	43.00	37.759	36.000	30.000
Lead	15.30	Sept. 26, 1955	14.80	14.800	14.800	14.400
Zinc	13.00	Sept. 6, 1955	12.50	12.500	12.500	11.900
Tin	96.875	Sept. 28, 1955	96.75	96.519	97.045	93.545
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	24.40	Aug. 8, 1955	23.20–24.40	24.267	23.200	22.200
Magnesium	32.50	Aug. 16, 1955	28.50	30.574	28.500	27.000

Quotations in cents per pound based COPPER, deld. Conn. Valley; LEAD, mon grade, deld. St. Louis; prime western, E. St. Louis; Straits, deld. New York; NICKEL, trolytic cathodes, 99.9%, base siz refinery, unpacked; ALUMINUM, pri ingots, 99 + %, deld.; MAGNES 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.**
  Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.**
  Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.**
  Maybe you want to keep a continuous record of pric spread between various forms of steel. You can get you base price information from STEEL's price tables.
- **A source of information on market trends.**
  Newsy items tell you about the supply-demand situatio of materials, including iron and steel, nonferrous metal and scrap. Other articles analyze special situations of in terest and importance to you.
- **Reports on iron and steel production, and materials and prod uct shipments.**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RAYMOND Manufacturing COMPANY
CORRY, PENNSYLVANIA
BARNES-GIBSON-RAYMOND
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B-G-R COOK PLANT
ANN ARBOR MICHIGAN
DIVISIONS OF ASSOCIATED SPRING CORPORATION
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SEABOARD Coil Spring Div.
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Nonferrous Metals

Proposals for ending the copper shortage show how desperate fabricators are becoming. Most plans are impractical or would require revisions in the law

Nonferrous Metal Prices, Pages 106 & 107

WASHINGTON has been deluged with every kind of plan copper users can devise to ease the red metal shortage. But the fact remains: Their only help will come from increased supply, decreased demand or both.

One plan requests the President to release up to 100,000 tons of copper from the stockpile. It is impossible to release even 1 lb under the present law. An emergency exists for some members of the industry, but the law specifies national emergency, which this is not.

Copper for Wheat—James T. Patterson, Republican representative from the Naugatuck valley in Connecticut, has come up with a plan which asks the government to barter surplus farm products for foreign copper and to buy copper in the world market for resale to users at the current domestic price. Assuming such a plan were possible, the time required to get it in operation would rule it out as an immediate aid.

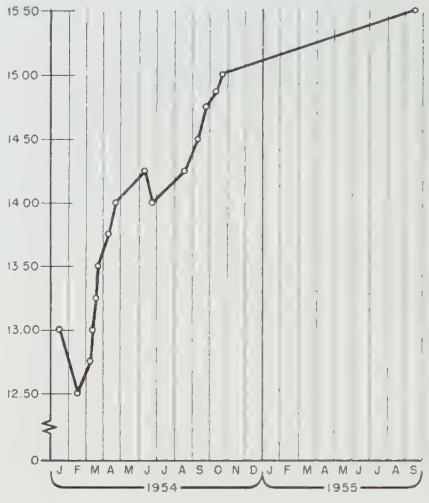
In addition, this plan, as well as most others, overlooks one important fact: The present shortage is worldwide, and there probably isn't any excess copper to be had on the open market. If the United States government were to enter the market as a bidder for the red metal, the world price inevitably would rise. Uncle Sam would have to sell this high-priced copper to users at the average domestic price, which is now about 44 cents a pound. The difference would amount to a subsidy by the government, and Washington has not been inclined to favor such handouts. Furthermore, U. S. scrap prices, which seem to follow the world price, would spiral and hurt the brass mills more than ever.

Death Blow—In the final analysis, this plan would get the ax because it is doubtful that it is legal. If the Department of Agriculture managed to barter some wheat for Chilean copper, there would have to be the transfer of funds and title so the Office of Defense Mobilization could get the metal into Defense Production Act inventory. Metal from this source has been used only for extreme hardship cases, flood relief and defense use. It would be hard to justify relief just to assure an industry of full employment.

Another proposal made by fabricators: ODM should stockpile as much as 100,000 tons of copper in the mills themselves rather than in warehouses. The mills would use the metal, promising at all times to have in storage or in process no less than the 100,000 tons. The government would not give up title to the metal and would have full control over it whenever it wished. In an emergency, fabricators argue, the copper would be used for government work, saving the time and expense of getting it from stockpile to the fabricating plant. This plan is practically the same as the one asking for outright loan of 100,000 tons, which the government has turned down. The metal still would be borrowed, no matter where the government stored it.

LEAD PRICE

Major Steps on Comeback Trail
(Cents per pound, New York)



Distribution would be a tricky problem for any plan involving such government aid. The metal would have to be allocated, and that would involve some degree of government control. Industry doesn't want that.

More Life for LIFO—Copper users also have asked for an extension of the LIFO (last in, first out) inventory method. They don't want to take a tax beating on their liquidated inventories, which have been carried at low cost. LIFO was initially a defense measure, and some quarters believe Congress would balk at extending it past its expiration date of De 31. Besides, Congress won't be ba in session until after Jan. 1—too la to do any good in the present sho age. There has even been some ta about a copper loan from Great Bri ain, but nobody treats that seriousl Copper is short over there, too.

Sad Song—So it looks like t shortage will continue unabated f some time. Eventually, demand a supply will come into balance. B when that happens, producers ha the extra burden of repaying t government for its help since la October. Through the third quarte the dole amounted to 26,000 tons (r payment date is June 30, 1956). A other 11,000 tons is authorized f the fourth quarter (repayment dat Sept. 30, 1956). There is little dou in Washington that the governme will postpone the repayments fu ther if the shortage continues. Bu eventually, it must be paid back.

Lead Makes Move Up

Lead, which for almost a year wa one of the most stable metals pric wise, moved up a half cent on t price scale on Sept. 23 and is pegge at 15.50 cents a pound, New Yor A strong market, shrinking stoc and increased labor costs made th move possible. It had been thoug by many observers that the increa would not come despite the favorab conditions because of uncertain about the government's attitude. A one time, the combined level of 2 cents a pound for lead and zinc wa considered the top price at which th government would buy for stockpil Although there has been little i terest in offering metal for stoc pile recently, producers are countin on the government coming to t rescue if the market slumps. Th graph at left shows that with min exceptions, the price of lead ha been on the uptrend since early 195 There have been 16 price chang in that time.

Market Memos

- Of the major metals, nickel alon has maintained a steady price s far in 1955. From Jan. 3 to Sep 23, the Bureau of Labor Statistic index for metals rose from 99.5 t 119.8 per cent (1947-1949=100).
- Following the lead price rise, ru mor had it that zinc might advanc again. Demand is still strong, eve at 13 cents a pound.

Looking for a TOUGHER STEEL?

Unusually tough, even at sub-zero temperatures, Lukens "T-1" steel can reduce equipment costs.

Failure from abrasion or from impact can happen to the steel in your equipment, too. Here's the answer—the tougher steel you've been looking for. Lukens "T-1" steel has excellent resistance to the combination of wear and impact, is tough enough to withstand unusual stresses and pressures as well as shock at either sub-zero or high temperatures, thus lowering maintenance costs and lengthening equipment life.

Equipment builders will find that the techniques of working with this new steel are no different than with carbon steel. Lukens "T-1" steel can be fabricated not only in the shop but also in the field, through proper design procedures. Because of its high yield strength (over 90,000 psi) this new steel offers lighter weight and reduced thickness in comparison to heavier, thicker plates of carbon steel, thereby reducing material, fabrication and shipping costs. And Lukens' range of steel plate sizes—including the widest and heaviest plates available anywhere—makes possible additional savings for equipment builders through the use of wider plates that require fewer welded seams.

The latest addition to Lukens' complete line of carbon, alloy and clad steels, this quenched and tempered alloy plate steel's unusual combination of properties suit it especially to application in pressure vessels, bridges, shipbuilding, construction machinery and general industrial equipment. On problems of design, selection, application and fabricating techniques, Lukens offers full technical assistance. If you would like further information on Lukens "T-1" steel, write for the new 28-page Bulletin 781. Address: Manager, Marketing Service, 773 Lukens Building, Lukens Steel Company, Coatesville, Pa.

LUKENS "T-1" STEEL

THE NEWEST IN A COMPLETE LINE OF ALLOY STEELS

LUKENS STEEL COMPANY, COATESVILLE, PENNSYLVANIA

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 24.40, pigs 22.50. 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 26.2; No. 43, 5% Si, 26.00; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 28.20; No. 195, 4.5% Cu, 0.8% Si, 27.60; No. 214, 3.8% Mg, 27.80, No. 356, 7% Si, 0.3% Mg, 26.20.

Antimony: R.M.M. brand, 99.5%, 33.00, Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic, 43.00 deld. Conn. Valley; 43.00 deld. Midwest; custom smelters, 50.00 deld.; Lake, 43.00 deld.; Fire refined, 42.75 deld.

Germanium: 99.9% $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$110 nom, per troy oz.

Lead: Common, 15.30, chemical, 15.40, corroding, 15.40, St. Louis. New York basis, add 0.20.

Lithium: 99%+, cups or ingot, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: 99.8%, self-palletizing pig, 32.50; notched ingot, 33.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingot; for Los Angeles, add 2.00 for both pig and ingot. Sticks 1.3 in. diameter, 53.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, G, H and R, 36.00; alloy M, 38.00, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, $269-$275 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced, $3-$3.25 per lb; pressed ingot, $4.06 per lb; sintered ingot, $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 64.50; 10-lb pigs, unpacked, 67.65; "XX" nickel shot, 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $80-$100, nom., per troy oz.

Palladium: $22-$24 per troy oz.

Platinum: $91-$96 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$55 per troy oz.

Selenium: 99.5%, $9-$10 per lb.

Silver: Open market, 90.75 per troy oz.

Sodium: 16.50, c.l.; 17.00, l.c.l.

Tantalum: Sheet, rod, $68.70 per lb; powder, $56.63 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot 96.875; prompt, 96.75.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max), $3.95, grade A-2 (0.5% Fe max), $3.50 per pound.

Tungsten: Powder, 98.8%, carbon, reduced, 1000-lb lots, $4.50 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99+% hydrogen reduced, $4.65. Treated ingots, $6.70.

Zinc: Prime Western, 13.00; brass special, 13.25; intermediate, 13.50, E. St. Louis, freight allowed over 0.50 per pound. High grade, 14.35; special high grade, 14.50, deld. Diecasting alloy ingot No. 3, 17.25; No. 2, 18.25; No. 5, 17.75, deld.

Zirconium: Ingots, commercial grade, 14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, $10 per lb. Powder electronics grade, $15 per lb; flash grade, $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 32.00-33.75; No. 12 foundry alloy (No. 2 grade), 31.00-31.25; 5% silicon alloy, 0.60 Cu max, 32.50-32.75; 13 alloy, 0.60 Cu max, 32.50-32.75; 195 alloy, 32.75; 108 alloy, 31.00. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 30.50-31.75; grade 2, 29.50-30.75; grade 3, 28.50-30.00; grade 4, 28.00-29.50.

Brass Ingot: Red brass No. 115, 42.50; tin bronze No. 225, 56.50; No. 245, 48.75; high-leaded tin bronze No. 305, 45.75; No. 1 yellow No. 405, 34.75; manganese bronze No. 421, 38.25.

Magnesium Alloy Ingot: AZ63A, 34.00; AZ91B, 34.00; AZ91C, 34.00; AZ92A, 34.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.84; rod, bar, wire, $1.81.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 48.35; 30,000-lb lots 48.88; l.c.l., 48.98. Weatherproof, 100,000-lb lots, 46.03; 30,000-lb lots, 46.28; l.c.l., 46.78. Magnetic wire deld., 15,000 lb or more, 55.52; l.c.l., 56.27.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more, $21 per cwt; pipe, full coils, $21 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $14.00-$14.50; sheared mill plate, $11.00; strip, $14.00-$14.50; wire, $10.00-$10.50; forging billets, $8.75; hot-rolled and forged bars, $8.75.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 23.00; ribbon zinc in coils, 20.50; plates 19.50-22.25.

ZIRCONIUM

Plate, $22; H.R. strip, $19; C.R. strip, $29; forged or H.R. bars, $17; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks	...	65	...

ALUMINUM

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	—Round— 2011-T3	2017-T4	—Hexagonal— 2011-T3	2017-T4
Drawn				
0.125	67.9	66.4	...	...
0.156-0.172	57.5	55.9	...	...
0.188	57.5	55.9	...	71.7
0.219-0.234	54.5	52.9	...	...
0.250-0.281	54.5	52.9	...	68.4
0.313	54.5	52.9	...	65.2
Cold-finished				
0.375-0.547	53.4	51.4	63.7	61.3
0.563-0.688	53.4	51.4	60.6	57.5
0.750-1.000	52.1	50.1	55.4	54.2
1.063	52.1	50.1	...	52.3
1.125-1.500	50.1	48.2	53.6	52.3
Rolled				
1.563	48.8	46.9	...	...
1.625-2.000	48.2	46.2	...	50.5
2.125-2.500	47.0	45.0	...	...
2.563-3.375	45.6	43.6	...	...

ALUMINUM

Sheets and Circles: 110 and 3003 mill finish (30,000 lb base; freight allowed)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coiled Sheet Circles†
0.249-0.136	37.5	42.3	...	...
0.135-0.096	38.0	43.2	...	...
0.095-0.077	38.7	44.2	36.1	41.1
0.076-0.061	39.3	45.1	36.3	41.3
0.060-0.048	39.9	45.6	36.7	42.0
0.047-0.038	40.4	46.5	37.2	42.7
0.037-0.039	40.8	47.0	37.6	43.2
0.029-0.024	41.4	47.5	37.9	43.7
0.023-0.019	42.2	49.0	38.8	44.8
0.018-0.017	43.0	...	39.4	45.5
0.016-0.015	43.9	...	40.2	46.4
0.014	44.9	...	41.2	47.5
0.013-0.012	46.1	...	41.9	48.3
0.011	47.1	...	43.1	50.0
0.010-0.0095	48.4	...	44.3	52.2
0.009-0.0085	49.7	...	45.8	54.1
0.008-0.0075	51.3	...	47.0	56.1
0.007	52.8	...	48.5	58.2
0.006	54.4	...	49.9	63.1

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam. 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	36.5	40.8
5050-F	37.6	41.9
3004-F	38.6	43.8
5052-F	39.9	45.2
6061-T6	41.1	46.0
2024-T4*	43.6	49.9
7075-T6*	51.4	58.5

*24-48 in. widths or diam, 72-180 in. lengths

ALUMINUM

Forging Stock: Round, Class 1, 39.10-50.10c in specific lengths 36-144 in., diameters 0.375-8 in. Rectangles and squares, Class 1, 43.00-56.20 in random lengths, 0.375-4 in. thick, widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20-ft lengths, plain ends, 90,000-lb base, per 100 ft

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$16.85	2	$ 51.90
1	26.50	4	143.00
1¼	35.85	6	256.70
1½	42.90	8	386.30

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032 in. 99c; 0.064 in., 78.00c; 0.125 in., 63.50c, 30,000 lb and over, f.o.b. mill.

Plate: AZ31, 61.00c, 30,000 lb or more, 0.250 in. and over, widths 24-60 in., lengths 72-180 in.; tread plate, 64.00c, 30,000 lb or more, ¼ in. thick, widths 24-60 in., lengths 60-192 in.; tooling plate, 66.00c, 30,000 lbs or more, .250-3.000 in., widths 60-72 in., lengths 72-180 in.

Extrusions: AZ31 commercial grade, rectangles, ¼ x 2 in., 64.70c; 1 x 4 in., 69.50c. Rod, 1 in., 61.50c; 2 in., 59.00c. Tubing, 1 in. OD x 0.065 in., 82.50c; Angles, 1 x 1 x ⅛-in., 68.40c; 2 x 2 x ¼-in., 62.50c. Channels, 3 in., 63.40c. I-beams, 5 in., 62.70c.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings, 19.50; old sheets, 17.00-17.50; borings and turnings, 11.00-11.50; crankcases, 17.00-17.50; industrial castings, 16.70-17.50.

Copper and Brass: No. 1 heavy copper and wire, 39.50-40.50; No. 2 heavy copper and wire, 38.50-39.50; light copper, 36.50-37.50; No. 1 composition red brass, 30.50-32.00; No. 1 composition turnings, 29.50-31.00; yellow

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	62.76b	60.36c	....	62.82	39.000	39.000	38.250
Yellow Brass	52.27	42.41d	52.81	55.18	28.875	28.625	26.750
Red Brass, 85%	58.09	58.03	58.63	60.90	34.250	34.000	33.500
Low Brass, 80%	56.55	56.49	57.09	59.36	32.750	32.250	31.750
Naval Brass	55.63	49.94	62.69	58.79	26.750	26.500	26.000
Com. Bronze, 90%	60.18	60.12	60.72	62.74	35.750	35.500	35.000
Nickel Silver, 10%	66.00	68.33g	68.33	....	32.500	32.250	16.250
Phos. Bronze, A, 5%	80.99	81.49	81.49	82.67	39.250	39.000	38.000
Silicon Bronze	66.54	65.73	66.58	68.68e	37.625	37.375	36.875
Manganese Bronze	59.37	53.38	63.82	....	27.000	26.750	25.750
Muntz Metal	53.74	49.55	....	....	27.000	26.750	26.250

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

ass turnings, 18.50-19.00; new brass clippings, 25.00-26.50; light brass, 18.50-19.50; navy yellow brass, 22.00-22.50; new brass rod ends, 23.50-25.00; auto radiators, unsweated, 24.00-25.00; cocks and faucets, 24.50-25.50; brass pipe, 25.00-27.00.

Lead: Heavy, 12.00-12.50; battery plates, 6.50-7.75; linotype and stereotype, 14.00-14.75; electrotype, 12.00-12.75; mixed babbitt, 14.50.

Magnesium: Clippings, 18.50-19.50; clean castings, 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings, 44.50-60.00; old sheets, 40.00-45.00; turnings, 34.00; rods, 44.50-60.00.

Nickel: Sheets and clips, 90.00-92.00; rolled anodes, 90.00-92.00; turnings, 75.00; rod ends, 90.00-92.00.

Zinc: Old zinc, 5.50-6.00; new die-cast scrap, 5.00-5.75; old die-cast scrap; 3.50-4.00.

REFINER'S BUYING PRICES
(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 23.00; 3003 clippings, 22.75-23.00; 6151 clippings, 22.50-23.00; 52 clippings, 22.50-23.00; 2014 clippings, 21.50-22.00; 2017 clippings, 21.50-22.00; 2024 clippings, 21.50-22.00; mixed clippings, 21.50-22.50; old sheet, 19.50; old cast, 19.50; clean old cable (free of steel), 22.50-23.00; borings and turnings, 19.50-20.50.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 65.00; light scrap, 60.00; turnings and borings, 43.00-55.00.

Copper and Brass: No. 1 copper and wire, 44.00; No. 2 copper and wire, 42.00-42.50; light copper, 39.75-40.00; refinery brass (60% copper) per dry copper content, 38.50.

INGOTMAKERS' BUYING PRICES
(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 copper and wire, 44.00; No. 2 copper and wire, 42.00-42.50; light copper, 39.75-40.00; No. 1 composition borings, 34.00-34.50; No. 1 composition solids, 34.50-35.00; heavy yellow brass solids, 24.00-25.00; yellow brass turnings, 23.00-25.00; radiators, 26.00-28.00.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 59.42, oval, 58.92, 5000-10,000 lb; electrodeposited, 56.78, 2000-5000 lb lots; cast 62.54, 5000-10,00 lb quantities.

Nickel: Depolarized, less than 100 lb, $1.015; 100-499 lb, 99.50; 500-4999 lb, 95.50; 5000-29,999 lb, 93.50; 30,000 lb, 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb, $1.155 200-499 lb, $1.14, 500-999 lb, $1.135; 1000 lb or more, $1.13.

Zinc: Balls, 21.00; flat tops, 21.00; flats, 22.75; ovals, 22.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100-lb drums.

Chromic Acid: Less than 10,000 lb, 28.50; over 10,000 lb, 27.50.

Copper Cyanide: 100-1000 lb, 80.00; 1000 lb and over, 78.00; effective Sept. 1, 1955.

Copper Sulphate: Crystal, 100 lb, 21.50; 200 lb, 18.50; 300 lb, 17.50; 400 lb, 17.00; 500-1900 lb, 15.50; 2000-10,000 lb, 15.25; 10,000 lb and up, 15.15. Powder, add 0.5 to above prices. Effective Mar. 29, 1955.

Nickel Chloride: 100 lb, 46.50; 200 lb, 44.50; 300 lb, 43.50; 400-4900 lb, 41.50; 5000-9900 lb, 39.50; 10,000 lb and over, 38.50. All prices eastern delivery, efective Jan. 1, 1955.

Nickel Sulphate: 100 lb, 38.25; 200 lb, 36.25; 300 lb, 35.25; 400-4900 lb, 33.25; 5000-35,900 lb, 31.25; 36,000 lb, 30.25. All prices eastern delivery, effective Jan. 1, 1955.

Silver Cyanide: (Cents per ounce) 4-oz bottle, 83.125; 16-oz bottle, 81.875; 80-oz bottle, 79.375; 100-oz bottle, 79.375; f.o.b. St. Louis, New York and Los Angeles. Effective Apr. 6, 1955.

Sodium Cyanide: Egg, under 1000 lb, 19.80; 1000-19,900 lb, 18.80; 20,000 lb and over, 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb, 73.00; 100-600 lb, 58.6; 700-1900 lb, 56.1; 2000-9900 lb, 54.4; 10,000 lb or more, 53.2.

Stannous Chloride (Anhydrous): Less than 50 lb, $1.594; 50 lb, $1.254; 100-300 lb, $1.104; 400-900 lb, $1.08; 1000-1900 lb, $1.055; 2000-4900 lb, $1.019; 5000-19,900 lb, 95.8; 20,000 lb or more, 89.7.

Stannous Sulphate: Less than 500 lb, $1.293; 50 lb, 99.30; 100-1900 lb, 97.30; 2000 lb or more, 95.3.

Zinc Cyanide: Under 1000 lb, 54.30; 1000 lb and over, 52.30.

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key on page 109. Key to footnotes, page 111.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$65.50

INGOTS, Alloy (NT)

Detroit R7 .....$69.00
Houston S5 .....74.00
Midland,Pa. C18 ....69.00
Munhall, Pa. U5 .....69.00

BILLETS, BLOOMS & SLABS
Carbon, rerolling (NT)

Aliquippa,Pa. J5 ....$68.50
Bessemer,Pa. U5 .....68.50
Bridgeport,Conn. N19..73.50
Buffalo R2 .....68.50
Clairton,Pa. U5 .....68.50
Ensley,Ala. T2 .....68.50
Fairfield,Ala. T2 .....68.50
Fontana,Calif. K1 ....76.00
Gary,Ind. U5 .....68.50
Johnstown,Pa. B2 ....68.50
Lackawanna,N.Y. B2 ..68.50
LoneStar,Tex. L6 .....74.50
Munhall,Pa. U5 .....68.50
Pittsburgh J5 .....68.50
S.Chicago,Ill. R2, U5..68.50
S.Duquesne,Pa. U5 ...68.50
Youngstown R2 .....68.50

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$84.50
Bessemer,Pa. U5 .....84.50
Bridgeport,Conn. N19..89.50
Buffalo R2 .....84.50
Canton,O. R2 .....86.50
Clairton,Pa. U5 .....84.50
Conshohocken,Pa. A3..89.50
Ensley,Ala. T2 .....84.50
Fairfield,Ala. T2 .....84.50
Fontana,Calif. K1 ....92.00
Gary,Ind. U5 .....84.50
Geneva,Utah C11 .....84.50
Houston S5 .....89.50
Johnstown,Pa. B2 ....84.50
Lackawanna,N.Y. B2..84.50
LosAngeles B3 .....94.00
Midland,Pa. C18 .....84.50
Munhall,Pa. U5 .....84.50
Pittsburgh J5 .....84.50
Seattle B3 .....98.00
S.Chicago R2,U5,W14 ..84.50
S.Duquesne,Pa. U5 ....84.50
S.SanFrancisco B3 ....94.00

Alloy, Forging (NT)

Bethlehem,Pa. B2 ...$96.00
Buffalo R2 .....96.00
Canton,O. R2, T7 ....96.00
Conshohocken,Pa. A3..103.00
Detroit R7 .....96.00
Fontana,Calif. K1 ....115.00
Gary,Ind. U5 .....96.00
Houston S5 .....101.00
Ind.Harbor,Ind. Y1 ...96.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2 ..96.00
LosAngeles B3 .....116.00
Massillon,O. R2 .....96.00
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
S.Chicago R2,U5,W14..96.00
S.Duquesne,Pa. U5 ...96.00
Struthers,O. Y1 .....96.00
Warren,O. C17 .....96.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$103.50
Canton,O. R2 .....103.50
Cleveland R2 .....103.50
Gary,Ind. U5 .....103.50
S.Chicago R2, W14 ...103.50
S.Duquesne,Pa. U5 ...103.50

SKELP

Aliquippa,Pa. J5 ....4.325
LoneStar,Tex. L6 ....4.625
Munhall,Pa. U5 .....4.225
SparrowsPoint,Md. B2..4.225
Warren,O. R2 .....4.225
Youngstown R2, U5 ...4.225

WIRE RODS

AlabamaCity,Ala. R2 ..5.025
Aliquippa,Pa. J5 .....5.025
Alton,Ill. L1 .....5.20
Buffalo B11, W12 ....5.025
Cleveland A7 .....5.025
Donora,Pa. A7 .....5.025
Fairfield,Ala. T2 .....5.025
Houston S5 .....5.275
IndianaHarbor,Ind. Y1..5.025
Johnstown,Pa. B2 ....5.025
Joliet,Ill. A7 .....5.025
KansasCity,Mo. S5 ....5.275
Kokomo,Ind. C16 ....5.125
LosAngeles B3 .....5.825
Minnequa,Colo. C10....5.275
Monessen,Pa. P7 .....5.025
N.Tonawanda,N.Y. B11..5.025
Pittsburg,Calif. C11 ...5.675
Portsmouth P12 .....5.025
Roebling,N.J. R5 ....5.125
S.Chicago,Ill. R2 ....5.025
SparrowsPoint,Md. B2..5.125
Sterling,Ill.(1) N15 ....5.025
Sterling,Ill. N15 .....5.125
Struthers,O. Y1 .....5.025
Worcester,Mass. A7 ...5.325

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2 .....4.60
Aliquippa,Pa. J5 .....4.60
Bessemer,Ala T2 .....4.60
Bethlehem,Pa. B2 .....4.65
Birmingham C15 .....4.60
Clairton,Pa. U5 .....4.60
Fairfield,Ala. T2 .....4.60
Fontana,Calif. K1 .....5.25
Gary,Ind. U5 .....4.60
Geneva,Utah C11 .....4.60
Houston S5 .....4.70
Ind.Harbor,Ind. I-2 ....4.60
Johnstown,Pa. B2 ....4.65
KansasCity,Mo. S5 ....4.70
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.30
Minnequa,Colo. C10 ....4.90
Munhall,Pa. U5 .....4.60
Niles,Calif. P1 .....4.90
Portland,Oreg. O4 ....5.35
Phoenixville,Pa. P4 ....5.15
Seattle B3 .....5.35
S.Chicago U5, W14 ....4.60
S.SanFrancisco B3 ....5.25
Torrance,Calif. C11 ....5.30
Weirton,W.Va. W6 ....4.60

Wide Flange

Bethlehem,Pa. B2 ....4.65
Clairton,Pa. U5 .....4.60
Fontana,Calif. K1 ....5.40
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
Phoenixville,Pa. P4 ....5.15
S.Chicago,Ill. U5 .....4.60

Alloy Std. Shapes

Clairton, Pa. U5 .....5.65
Fontana,Calif. K1 ....7.30
Gary,Ind. U5 .....5.65
Houston S5 .....5.75
Munhall,Pa. U5 .....5.65
S.Chicago,Ill. U5 .....5.65

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 .....6.75
Bessemer,Ala. T2 .....6.75
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.75
Fairfield,Ala. T2 .....6.75
Fontana,Calif. K1 ....7.40
Gary,Ind. U5 .....6.75
Geneva,Utah C11 .....6.75
Houston S5 .....6.85
Ind.Harbor,Ind. I-2, Y1..6.75
Johnstown,Pa. B2 ....6.80
KansasCity,Mo. S5 ....6.85
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 .....7.45
Munhall,Pa. U5 .....6.75
Seattle B3 .....7.50
S.Chicago,Ill. U5, W14..6.75
S.SanFrancisco B3 ....7.40
Struthers,O. Y1 .....6.75

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 ....6.80
Lackawanna,N.Y. B2 ...6.80
Munhall,Pa. U5 .....6.75
S.Chicago,Ill. U5 .....6.75

PILING

BEARING PILES

Bethlehem,Pa. B2 ....4.65
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
S.Chicago,Ill. U5 .....4.60

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ....5.45
Lackawanna,N.Y. B2 ...5.45
Munhall,Pa. U5 .....5.45
S.Chicago,Ill. U5 .....5.45

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 .....4.50
Aliquippa,Pa. J5 .....4.50
Ashland,Ky.(15) A10 ...4.50
Bessemer,Ala. T2 .....4.50
Bridgeport,Conn. N19 ..4.75
Buffalo R2 .....4.50
Clairton,Pa. U5 .....4.50
Claymont,Del. C22 ....4.50
Cleveland J5, R2 .....4.60
Coatesville,Pa. L7 ....4.50
Conshohocken,Pa. A3 ..4.50
Detroit M1 .....4.60
Ecorse,Mich. G5 .....4.60
Fairfield,Ala. T2 .....4.50
Fontana,Calif.(30) K1 ..5.15
Gary,Ind. U5 .....4.50
Geneva,Utah C11 .....4.50
GraniteCity,Ill. G4 ....4.70
Harrisburg,Pa. C5 ....5.10
Houston S5 .....4.60
Ind.Harbor,Ind. I-2, Y1.4.50
Johnstown,Pa. B2 ....4.50
Lackawanna,N.Y. B2 ...4.50
LoneStar,Tex. L6 .....4.85
Mansfield,O. E6 .....4.50
Minnequa,Colo. C10 ....5.35
Munhall,Pa. U5 .....4.50
Newport,Ky. N9 .....4.50
Pittsburgh J5 .....4.50
Riverdale,Ill. A1 .....4.50
Seattle B3 .....5.40
Sharon,Pa. S3 .....4.50
S.Chicago R2, U5, W14.4.50
SparrowsPoint,Md. B2 ..4.50
Steubenville,O. W10 ....4.50
Warren,O. R2 .....4.50
Weirton,W.Va. W6 ....4.50
Youngstown R2, U5, Y1.4.50

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 ....6.30
Geneva,Utah C11 .....5.65
Johnstown,Pa. B2 .....5.65
SparrowsPoint,Md. B2 ..5.65

PLATES, Wrought Iron

Economy,Pa. B14 ....10.40

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 ....6.725
Bessemer,Ala. T2 ....6.725
Clairton,Pa. U5 .....6.725
Cleveland J5, R2 ....6.725
Coatesville,Pa. L7 ....6.725
Conshohocken,Pa. A3 ..6.725
Ecorse,Mich. G5 .....6.825
Fairfield,Ala. T2 .....6.725
Fontana,Calif.(30) K1..7.375
Gary,Ind. U5 .....6.725
Geneva,Utah C11 ....6.725
Houston S5 .....6.825
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 ....6.725
LosAngeles B3 .....7.625
Munhall,Pa. U5 .....6.725
Pittsburgh J5 .....6.725
Seattle B3 .....7.625
Sharon,Pa. S3 .....6.725
S.Chicago,Ill. U5, W14..6.725
SparrowsPoint,Md. B2..6.725
Youngstown U5, Y1 ...6.725

PLATES, Alloy

Bridgeport,Conn. N19 ...6.55
Claymont,Del. C22 ....6.30
Coatesville,Pa. L7 ....6.30
Fontana,Calif. K1 .....6.95
Gary,Ind. U5 .....6.30
Houston S5 .....6.40
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 ....6.30
Munhall,Pa. U5 .....6.30
Newport,Ky. N9 .....6.30
Seattle B3 .....7.20
Sharon,Pa. S3 .....6.30
S.Chicago,Ill. U5, W14..6.30
SparrowsPoint,Md. B2 ..6.30
Youngstown Y1 .....6.30

FLOOR PLATES

Cleveland J5 .....5.575
Conshohocken,Pa. A3 ..5.575
Harrisburg,Pa. C5 ....5.575
Ind.Harbor,Ind. I-2 ...5.575
Munhall,Pa. U5 .....5.575
S.Chicago,Ill. U5 .....5.575

PLATES, Ingot Iron

Ashland c.l. (15) A10...4.75
Ashland l.c.l (15) A10..5.25
Cleveland c.l. R2 .....5.10
Warren,O. c.l. R2 ....5.10

BARS

BARS, Hot-Rolled Carbon

Ala.City,Ala. R2 .....4.65
Aliquippa,Pa. J5 .....4.65
Alton,Ill. L1 .....4.85
Atlanta A11 .....4.85
Bessemer,Ala. T2 .....4.65
Birmingham C15 .....4.65
Bridgeport,Conn. N19 ..4.80
Buffalo R2 .....4.65
Canton,O. R2 .....4.75
Clairton,Pa. U5 .....4.65
Cleveland R2 .....4.65
Ecorse,Mich. G5 .....4.75
Emeryville,Calif. J7 ....5.40
Fairfield,Ala. T2 .....4.65
FairlessHills,Pa. U5 ..4.80
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.65
Houston S5 .....4.90
Ind.Harbor,Ind. I-2, Y1.4.65
Johnstown,Pa. B2 ....4.65
Joliet,Ill. P22 .....4.65
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.75
Midland,Pa. C18 .....4.65
Milton,Pa. M18 .....4.65
Minnequa,Colo. C10 ....5.10
Niles,Calif. P1 .....5.00
N.Tonawanda,N.Y. B11..4.65
Pittsburg,Calif. C11 ....5.35
Pittsburgh J5 .....4.65
Portland,Oreg. O4 .....5.40
Seattle B3, N14 .....5.40
S.Chicago R2, U5, W14..4.65
S.Duquesne,Pa. U5 ....4.65
S.SanFran.,Calif. B3 ...5.40
Sterling,Ill.(1) N15 ....4.65
Sterling,Ill. N15 .....4.75
Struthers,O. Y1 .....4.65
Torrance,Calif. C11 ....5.35
Warren,O. R2 .....4.65
Weirton,W.Va. W6 ....4.65
Youngstown R2, U5 ...4.65

BARS, H.R. Leaded Alloy

Warren,O. C17 .....6.325

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ....5.575
Bridgeport,Conn. N19 ..5.725
Buffalo R2 .....5.575
Canton,O. R2, T7 ....5.575
Clairton,Pa. U5 .....5.575
Detroit R7 .....5.575
Ecorse,Mich. G5 ....5.675
Fontana,Calif. K1 .....6.625
FairlessHills,Pa. U5 ...5.725
Gary,Ind. U5 .....5.575
Houston S5 .....5.825
Ind.Harbor,Ind. I-2, Y1.5.575
Johnstown,Pa. B2 ....5.575
KansasCity,Mo. S5 ..5.825
Lackawanna,N.Y. B2 ..5.575
LosAngeles B3 .....6.625
Massillon,O. R2 .....5.575
Midland,Pa. C18 .....5.575
S.Chicago R2, U5, W14.5.575
S.Duquesne,Pa. U5 ....5.575
Struthers,O. Y1 .....5.575
Warren,O. C17 .....5.575
Youngstown U5 .....5.575

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.80
Bessemer,Ala. T2 .....6.80
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.80
Cleveland R2 .....6.80
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....6.80
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
Ind.Harb.,Ind. I-2, Y1 ..6.80
Johnstown,Pa. B2 .....6.80
KansasCity,Mo. S5 ....7.05
Lackawanna,N.Y. B2 ..6.80
LosAngeles B3 .....7.50
Pittsburgh J5 .....6.80
Seattle B3 .....7.55
S.Chicago W14 .....6.80
S.Duquesne,Pa. U5 ....6.80
S.SanFrancisco B3 ....7.55
Struthers,O. Y1 .....6.80
Warren,O. R2 .....6.80
Youngstown U5 .....6.80

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 .....4.80

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....4.65
Atlanta A11 .....4.85
Fontana,Calif. K1 .....5.35
Niles,Calif. P1 .....5.00
Pittsburgh J5 .....
Portland,Oreg. O4 ....
SanFrancisco S7 .....

BAR SHAPES, Hot-Rolled Al

Clairton,Pa. U5 .....
Gary,Ind. U5 .....
Houston S5 .....
KansasCity,Mo. S5 ....
Youngstown U5 .....

BARS, C.F. Leaded Alloy

Ambridge,Pa. W18 ...8.
Camden,N.J. P13 .....
Chicago W18 .....8.
Cleveland C20 .....8.
Monaca, Pa. S17 ....8.
Newark,N.J. W18 .....
SpringCity,Pa. K3 ....
Warren,O. C17 .....8.

BARS, Cold-finished Carbon

Ambridge,Pa. W18 ....
BeaverFalls,Pa. M12,R2.
Buffalo B5 .....
Camden,N.J. P13 .....
Carnegie,Pa. C12 .....
Chicago W18 .....
Cleveland A7, C20 ....
Detroit R7 .....
Detroit B5, P17 .....
Donora,Pa. A7 .....
Elyria,O. W8 .....
FranklinPark,Ill. N5 ...
Gary,Ind. R2 .....
GreenBay,Wis. F7 .....
Hammond,Ind. L2, M13.
Hartford,Conn. R2 ....
Harvey,Ill. B5 .....
LosAngeles R2, S30 ....
Mansfield,Mass. B5 ....
Massillon,O. R2, R8 ....
Midland,Pa. C18 .....
Monaca,Pa. S17 .....
Newark,N.J. W18 .....
NewCastle,Pa.(17) B4 ..
Pittsburgh J5 .....
Plymouth,Mich. P5 ....
Putnam,Conn. W18 ....
Readville,Mass. C14 ....
S.Chicago,Ill. W14 ....
SpringCity,Pa. K3 ....
Struthers,O. Y1 .....
Waukegan,Ill. A7 .....
Worcester,Mass. W19 ...
Youngstown F3, Y1 ....

BARS, Cold-Finished Carbon
(Turned and Ground)

Cumberland,Md. C19 ...5.

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....7.4
BeaverFalls,Pa. M12,R2 7.4
Bethlehem,Pa. B2 .....7.4
Buffalo B5 .....7.4
Camden,N.J. P13 .....7.
Canton,O. T7 .....7.4
Carnegie,Pa. C12 .....7.4
Chicago W18 .....7.4
Cleveland A7, C20 ....7.4
Detroit R7 .....7.4
Detroit B5, P17 .....7.6
Donora,Pa. A7 .....7.4
Elyria,O. W8 .....7.4
Gary,Ind. R2 .....7.4
GreenBay, Wis. F7 ..7.4
Hammond,Ind. L2, M13.7.4
Hartford,Conn. R2 ....7.7
Harvey,Ill. B5 .....7.4
Lackawanna,N.Y. B2 ..7.4
LosAngeles S30 .....9.1
Mansfield,Mass. B5 ...7.7
Massillon,O. R2, R8 ...7.4
Midland,Pa. C18 .....7.4
Monaca,Pa. S17 .....7.4
Newark,N.J. W18 .....7.6
Plymouth,Mich. P5 ....7.6
S.Chicago W14 .....7.4
SpringCity,Pa. K3 ....7.6
Struthers,O. Y1 .....7.4
Warren,O. C17 .....7.4
Waukegan,Ill. A7 .....7.4
Worcester,Mass. A7 ...7.7
Youngstown F3, Y1 ...7.4

BARS, Reinforcing
(To Fabricators)

Ala.City,Ala. R2 .....4.6
Atlanta A11 .....4.8
Birmingham C15 .....4.6
Buffalo R2 .....4.6
Cleveland R2 .....4.6
Ecorse,Mich. G5 .....4.7
Emeryville,Calif. J7 ...5.4
Fairfield,Ala. T2 .....4.6
FairlessHills,Pa. U5 ....4.8
Fontana,Calif. K1 ....5.3
Ft.Worth,Tex.(42) T4 ..5.1
Gary,Ind. U5 .....4.6
Houston S5 .....4.9

.Harbor,Ind. I-2, Y1.4.65
nstown,Pa. B2 ....4.65
let,Ill. P22 .....4.65
nsasCity,Mo. S5 ....4.90
ckawanna,N.Y. B2 ..4.65
Angeles B3 .....5.35
ton,Pa. M18 .....4.65
nnequa,Colo. C10 ....5.10
es,Calif. P1 .....5.00
tsburg,Calif. C11 ....5.35
tsburgh J5 .....4.65
rtland,Oreg. O4 .....5.40
dSprings,Okla. S5 ..5.15
ttle B3, N14 .....5.40
hicago R2 .....4.65
Duquesne,Pa. U5 ....4.65
anFrancisco B3 ....5.40
rrowsPoint,Md. B2 ..4.65
rling,Ill.(1) N15 ....4.65
rling,Ill. N15 .....4.75
uthers,O. Y1 .....4.65
rrance,Calif. C11 ....5.35
ungstown R2, U5, Y1.4.65

RS, Reinforcing (Fabricated; to Consumers)

nstown,Pa. ¼-1" B2.6.15
nsasCity,Kans. S5 ...6.45
ckawanna,N.Y. B2 ..6.17
rion,O. P11 .....5.90
tsburgh U8 .....6.17
ttle B3, N14 .....6.60
rrowsPt. ½-1" B2 ..6.15
lliamsport,Pa. S19 ..6.00

IL STEEL BARS

is,Pa.(3) J8 .....4.25
icagoHts.(3) C2, I-2..4.55
icagoHts.(4) C2, I-2..4.65
Worth,Tex.(26) T4 ..4.95
anklin,Pa.(3) F5 ....4.55
anklin,Pa.(4) F5 ....4.65
rion,O.(3) P11 .....4.50
line,Ill.(3) R2 .....4.65
nawanda(3) B12 ....4.50
nawanda(4) B12 ....4.65
lliamsport,Pa.(3) S19.4.65

RS, Wrought Iron

nomy,Pa.(S.R.)B14 11.50
nomy,Pa.(D.R.)B14 14.30
nomy(Staybolt)B14 14.65
K.Rks. (S.R.) L5 ...11.50
K.Rks.(D.R.) L5 ...16.00
K.Rks.(Staybolt) L5.17.00

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 .....4.325
Allenport,Pa. P7 .....4.325
Ashland,Ky.(8) A10 ...4.325
Cleveland J5, R2 .....4.325
Conshohocken,Pa. A3 ..4.375
Detroit(8) M1 .....4.425
Dravosburg,Pa. U5 ....4.325
Ecorse,Mich. G5 .....4.425
Fairfield,Ala. T2 .....4.325
FairlessHills,Pa. U5 ...4.375
Fontana,Calif. K1 .....5.075
Gary,Ind. U5 .....4.325
Geneva,Utah C11 .....4.425
GraniteCity,Ill. G4 ....4.525
Ind.Harbor,Ind. I-2, Y1.4.325
Kokomo,Ind. C16 .....4.425
Lackawanna,N.Y. B2 ..4.325
Mansfield,O. E6, (37)..4.325
Munhall,Pa. U5 .....4.325
Newport,Ky.(8) N9 ...4.325
Niles,O. N12 .....4.325
Pittsburg,Calif. C11 ...5.025
Pittsburgh J5 .....4.325
Portsmouth,O. P12 ....4.325
Riverdale,Ill. A1 .....4.325
Sharon,Pa. S3 .....4.325
S.Chicago,Ill. W14 ....4.325
SparrowsPoint,Md. B2.4.325
Steubenville,O. W10 ...4.325
Warren,O. R2 .....4.325
Weirton,W.Va. W6 ....4.325
Youngstown U5, Y1 ..4.325

SHEETS, H.R. (19 Ga. & Lighter)

Ala.City,Ala. R2 .....5.625
Kokomo,Ind. C16 ....5.475
Niles,O. N12 .....5.325

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 ....7.20
Youngstown Y1 .....7.20

SHEETS, H.R. (14 Ga. & Heavier) High-Strength Low-Alloy

Cleveland J5, R2 ....6.375
Conshohocken,Pa. A3 ..6.425
Dravosburg,Pa. U5 ....6.375
Ecorse,Mich. G5 .....6.475
Fairfield,Ala. T2 ....6.375
FairlessHills,Pa. U5 ..6.425
Fontana,Calif. K1 ....7.125
Gary,Ind. U5 .....6.375
Ind.Harbor,Ind. I-2, Y1 6.375
Lackawanna(35) B2 ..6.375
Munhall,Pa. U5 .....6.375
Pittsburgh J5 .....6.375
Sharon,Pa. S3 .....6.375
S.Chicago,Ill. U5 .....6.375
SparrowsPoint(36) B2.6.375
Warren,O. R2 .....6.375
Weirton,W.Va. W6 ....6.375
Youngstown U5, Y1 ...6.375

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ...4.575
Cleveland R2 .....4.925
Ind.Harbor,Ind. I-2 ...4.575
Warren,O. R2 .....4.925

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 .....5.325
Cleveland J5, R2 .....5.325
Conshohocken,Pa. A3 ..5.375
Dravosburg,Pa. U5 ....5.325
Detroit M1 .....5.325
Ecorse,Mich. G5 .....5.425
Fairfield,Ala. T2 .....5.325
FairlessHills,Pa. U5 ...5.375
Follansbee.W.Va. F4 ..5.325
Fontana,Calif. K1 ....6.425
Gary,Ind. U5 .....5.325
GraniteCity,Ill. G4 ...5.525
Ind.Harbor,Ind. I-2, Y1 5.325
Lackawanna,N.Y. B2 ..5.325
Mansfield,O. E6 .....5.325
Middletown,O. A10 ....5.325
Newport,Ky. N9 .....5.325
Pittsburg,Calif. C11 ..6.275
Pittsburgh J5 .....5.325
Portsmouth,O. P12 ....5.325
SparrowsPoint,Md. B2..5.325
Steubenville,O. W10 ...5.325
Warren,O. R2 .....5.325
Weirton,W.Va. W6 ....5.325
Youngstown Y1 .....5.325

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ....7.875
Dravosburg,Pa. U5 ....7.875
Ecorse,Mich. G5 .....7.975
FairlessHills,Pa. U5 ...7.925
Fontana,Calif. K1 ....8.975
Gary,Ind. U5 .....7.875
IndianaHarbor,Ind. Y1.7.875
Lackawanna(37) B2 ..7.875
Pittsburgh J5 .....7.875
SparrowsPoint(38) B2 .7.875
Warren,O. R2 .....7.875
Weirton,W.Va. W6 ....7.875
Youngstown Y1 .....7.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....5.925
Middletown,O. A10 ....5.825
Warren,O. R2 .....5.925

SHEETS, Culvert (16 Gage)	Cu Alloy	Cu Fe
Ashland,Ky A10	6.90	...
Canton,O. R2	6.10	6.55
Dravosburg U5	6.10	...
Fairfield T2	6.10	...
Gary,Ind. U5	6.10	6.35
Ind.Harbor I-2	6.10	6.35
Kokomo,Ind. C16	6.20	...
MartinsFry. W10	6.10	...
Newport,Ky N9	6.10	6.35
Pitts.,Calif. C11	6.85	...
SparrowsPt. B2	6.10	...

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 .....7.15
Gary,Ind. U5 .....6.35
MartinsFry.O, W10 ....6.35

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 .....5.85‡
Ashland,Ky. A10 ....5.85†
Canton,O. R2 .....5.85‡
Delphos,O. N16 .....6.60‡
Dover, O. R1 .....5.85‡
Dravosburg,Pa. U5 ...5.85†
Fairfield,Ala. T2 ....5.85†
Gary,Ind. U5 .....5.85•
GraniteCity, Ill. G4 ...6.05
Ind.Harbor,Ind. I-2 ...5.85†
Kokomo,Ind. C16 ....5.95‡
MartinsFerry,O. W10 ..5.85•
Middletown,O. A10 ....5.85†
Newport,Ky. N9 .....5.85‡
Niles,O. N12 .....6.85‡
Pittsburg,Calif. C1 ...6.60•
SparrowsPt.,Md. B2 ...5.85†
Steubenville,O. W10 ...5.85‡
Warren,O. R2 .....5.85†
Weirton,W.Va. W6 ....5.85•

•Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....6.575

SHEETS, Galvanized High-Strength Low-Alloy

Dravosburg,Pa. U5 ....8.60
SparrowsPoint(39) B2 ..8.60

SHEETS, Galvannealed Steel

Canton,O. R2 .....6.25
Dravosburg,Pa. U5 ....6.25
Kokomo,Ind. C16 .....6.60
Newport,Ky. N9 .....6.25
Niles,O. N12 .....7.25

SHEETS, Galvanized Ingot Iron (Hot-dipped Continuous)

Ashland,Ky. A10 .....6.10
Canton,O. R2 .....6.60
Middletown,O. A10 ....6.10

SHEETS, Electrogalvanized

Cleveland(28) R2 ....6.70
Niles,O.(28) R2 .....6.70
Weirton,W.Va. W6 ....6.55

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1).8.50
Butler,Pa. A10 (type 2).8.60

SHEETS, Enameling Iron

Ashland,Ky. A10 .....5.90
Cleveland R2 .....5.90
Dravosburg,Pa. U5 ....5.90
Gary,Ind. U5 .....5.90
GraniteCity,Ill. G4 ....6.10
Ind.Harbor,Ind. I-2 ....5.90
Middletown,O. A10 ....5.90
Niles,O. N12 .....5.90
Youngstown Y1 .....5.90

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ...7.75
Ind.Harbor,Ind. I-2 ....7.75
Yorkville,O. W10 ....7.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10 6.25
Gary,Ind. U5 .....6.25
Mansfield,O. E6 .....6.25
Middletown,O. A10 ....6.25
Niles,O. N12 .....6.25
Weirton,W.Va. W6 ....6.25

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.65

Key to Producers

Acme Steel Co.
Alan Wood Steel Co.
Allegheny Ludlum Steel
Alloy Metal Wire Co.
American Shim Steel Co.
American Steel & Wire
Anchor Drawn Steel Co.
Angell Nail & Chaplet
Armco Steel Corp.
Atlantic Steel Co.

Babcock & Wilcox Co.
Bethlehem Steel Co.
Beth. Pac. Coast Steel
Blair Strip Steel Co.
Bliss & Laughlin Inc.
Braeburn Alloy Steel
Brainard Steel Div., Sharon Steel Corp.
E. & G. Brooke, Wickwire Spencer Steel Div. Colo. Fuel & Iron
Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
Buffalo Steel Corp.
A. M. Byers Co.
J. Bishop & Co.

Calstrip Steel Corp.
Calumet Steel Div. Borg-Warner Corp.
Carpenter Steel Co.
Central Iron & Steel Div. Barium Steel Corp.
Cleve. Cold Rolling Mills
Cold Metal Products Co.
Colonial Steel Co.
Colorado Fuel & Iron
Columbia-Geneva Steel
Columbia Steel & Shaft.
Columbia Tool Steel Co.
Compressed Steel Shaft.
Connors Steel Div. H. K. Porter Co. Inc.
Continental Steel Corp.
Copperweld Steel Co.
Crucible Steel Co.
Cumberland Steel Co.

C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins,E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest.SteelRoll.Mills
N15 Northwestern S.&W.Co.
N16 New Delphos Mfg.Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division. Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Division, H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..4.325
Allenport,Pa. P7 .....4.325
Alton,Ill. L1 .....4.50
Ashland,Ky.(8) A10 ...4.325
Atlanta A11 .....4.525
Bessemer,Ala. T2 .....4.325
Birmingham C15 .....4.325
Bridgeport,Conn. N19 ..4.625
Buffalo(27) R2 .....4.325
Conshohocken,Pa. A3 ..4.375
Detroit M1 .....4.425
Ecorse,Mich. G5 ..... 4.425
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.075
Gary,Ind. U5 .....4.325
Ind.Harbor,Ind. I-2, Y1.4.325
Johnstown,Pa.(25) B2..4.325
Lackaw'na,N.Y.(24) B2 4.325
LosAngeles(25) B3 ....5.075
Milton,Pa. M18 .....4.325
Minnequa,Colo. C10 ...5.425
NewBritain(10) S15 ...4.325
N.Tonawanda,N.Y. B11 4.325
Pittsburg,Calif. C11 ...5.075
Portsmouth,O. P12 ....4.325
Riverdale,Ill. A1 .....4.325
SanFrancisco S7 .....5.05
Seattle(25) B3 .....5.325
Seattle N14 .....5.40
Sharon,Pa. S3 .....4.325
S.Chicago,Ill. W14 ....4.325
S.SanFrancisco(25) B3.5.075
SparrowsPoint,Md. B2..4.325
Sterling(1) N15 .....4.325
Sterling,Ill. N15 .....4.425
Torrance,Calif. C11 ...5.075
Warren,O. R2 .....4.325
Weirton,W.Va. W6 ....4.325
Youngstown U5 .....4.325

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19 ..7.50
Carnegie,Pa. S18 .....7.20
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....7.20
Ind.Harbor,Ind. Y1 ....7.20
LosAngeles B3 .....8.40
Newport,Ky. N9 .....7.20
Sharon,Pa. S3 .....7.20
S.Chicago W14 .....7.20
Youngstown U5, Y1 ....7.20

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 .....6.425
Conshohocken,Pa. A3 ..6.425
Ecorse,Mich. G5 .....6.525
Fairfield,Ala. T2 .....6.425
Fontana,Calif. K1 ....7.525
Gary,Ind. U5 .....6.425
Houston S5 .....6.675
Ind.Harbor,Ind. I-2, Y1.6.425
KansasCity,Mo. S5 ....6.675
Lackawanna,N.Y. B2 ..6.425
LosAngeles(25) B3 ....7.175
Seattle(25) B3 .....7.425
Sharon,Pa. S3 .....6.425
S.SanFrancisco(25) B3.7.175
SparrowsPoint,Md. B2..6.425
Warren,O. R2 .....6.425
Weirton,W.Va. W6 ....6.425
Youngstown U5, Y1 ...6.425

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...4.575
Warren,O. R2 .....4.925

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....6.25
Baltimore T6 .....6.25
Boston T6 .....6.80
Buffalo S40 .....6.25
Cleveland J5 .....6.45
Cleveland A7 .....6.25
Conshohocken,Pa. A3 ...6.30
Dearborn,Mich. D3 ....6.35
Detroit D2, M1, P20 ...6.35
Dover,O. G6 .....6.25
Ecorse,Mich. G5 .....6.35
Follansbee,W.Va. F4 ...6.25
Fontana,Calif. K1 ....8.00
FranklinPark,Ill. T6 ...6.35
Ind.Harbor,Ind. I-2 ....6.35
Ind.Harbor,Ind. Y1 ....6.45
Indianapolis C8 .....6.40
Lackawanna,N.Y. B2 ..6.25
LosAngeles C1 .....8.50
NewBedford,Mass. R10..6.70
NewBritain(10) S15 ....6.25
NewCastle,Pa. B4, E5...6.25
NewHaven,Conn. A7 ....7.00
NewHaven,Conn. D2 ....6.70
NewKensington,Pa. A6..6.25
Pawtucket,R.I. R3 .....6.90
Pawtucket,R.I. N8 .....6.80
Pittsburgh J5 .....6.45
Portsmouth,O. P12 .....6.25
Riverdale,Ill. A1 .....6.35
Rome,N.Y.(32) R6 .....6.25
Sharon,Pa. S3 .....6.25
SparrowsPt.,Md. B2 ...6.25
Trenton,N.J.(31) R5 ...7.80
Wallingford,Conn. W2 ..6.70
Warren,O. R2 T5 .....6.25
Weirton,W.Va. W6 ....6.25
Worcester,Mass. A7 ....7.10
Youngstown Y1 .....6.45
Youngstown C8 .....6.25

STRIP, Cold-Rolled Alloy

Boston T6 .....13.80
Carnegie,Pa. S18 .....13.45
Cleveland A7 .....13.45
Dover,O. G6 .....13.45
FranklinPark,Ill. T6 ...13.45
Harrison,N.J. C18 .....13.45
Indianapolis C8 .....13.60
Pawtucket,R.I. N8 ....13.80
Sharon,Pa. S3 .....13.45
Worcester,Mass. A7 ...13.75
Youngstown C8 .....13.45

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7 .....9.10
Dearborn,Mich. D3 ....9.20
Dover,O. G6 .....9.30
Ecorse,Mich. G5 .....9.20

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	7.30	9.25	10.80	12.95	15.65
Boston T6	7.55	9.25	10.80	12.95	15.65
Bristol,Conn. W1	...	...	10.80	12.95	....
Carnegie,Pa. S18	...	8.95	10.50	12.65	....
Cleveland A7	7.00	8.95	10.50	12.65	15.35
Cleveland C7	...	8.95	10.50	12.65	15.35
Dearborn,Mich. D3	7.10	9.05	10.60	....	....
Detroit D2	7.10	9.05	10.60	12.75	....
Dover,O. G6	7.00	8.95	10.50	12.65	15.35
Follansbee,W.Va. F4	7.00	8.95	10.50**	....	....
FranklinPark,Ill. T6	7.10	8.95	10.50	12.65	15.35
Harrison,N.J. C18	...	...	10.80	12.95	15.65
Indianapolis C8	7.15	9.10	10.50	12.65	15.35
NewBritain,Conn.(10) S15.	7.00	8.95	10.50	12.65	15.35
NewCastle,Pa. B4, E5	7.00	8.95	10.50	12.65	....
NewHaven,Conn. D2	7.45	9.25	10.80	12.95	....
NewKensington,Pa. A6	7.00	8.95	10.50	....	....
New York W3	...	9.25	10.80	12.95	15.65
Pawtucket,R.I. N8	7.55	9.25	10.80	12.95	15.35
Riverdale,Ill. A1	7.10	8.95	10.50	12.65	15.35
Rome,N.Y.(32) R6	7.00	8.95	10.50	12.65	15.35
Sharon,Pa. S3	7.00	8.95	10.50	12.65	15.35
Trenton,N.J. R5	...	9.25	10.80	12.95	15.65
Wallingford,Conn. W2	7.45	9.25	10.80	12.95	15.65
Warren,O. T5	7.00	8.95	10.50	12.65	15.35
Weirton,W.Va. W6	7.00	8.95	10.50	12.65	15.35
Worcester,Mass. T6	7.55	9.25	10.80	12.95	15.65
Worcester,Mass. A7	7.85	9.25	10.80	12.95	15.65
Youngstown C8	7.00	8.95	10.50	12.65	15.35

**0.065 C, max.

Spring Steel (Tempered)

Bristol,Conn. W1	...	...	14.40	17.60	....
Buffalo W12	...	...	14.40	....	....
FranklinPark,Ill. T6	...	...	14.90	18.10	21.50
Harrison,N.J. C18	...	...	14.40	17.60	21.00
NewYork W3	...	...	14.40	17.60	21.00
Trenton,N.J. R5	...	...	14.40	17.60	21.00
Worcester,Mass. A7, T6	...	...	14.40	17.60	21.00
Worcester,Mass. W12	...	...	14.40	....	....
Youngstown C8	...	...	14.75	17.95	21.35

STRIP, Electrogalvanized

Cleveland A7 .....6.25*
Dover,O. G6 .....6.25*
Riverdale,Ill. A1 .....6.55*
Youngstown C8 .....6.25*
Warren,O. T5 .....6.25*
Warren,O. B9 .....6.45*
Weirton,W.Va. W6 ....5.75*
Worcester,Mass. A7 ...7.10*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3 .....6.55

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.05
Riverdale,Ill. A1 .....4.90
Sharon,Pa. S3 .....4.75
Youngstown U5 .....4.75

SILICON STEEL

H.R. SHEETS(22 Ga.,cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10 ..	...	...	9.95	10.95	11.85
Brackenridge,Pa. A4	...	...	9.95	10.95	11.85
Mansfield,O. E6	8.40	9.35	9.95	10.95	11.85
Newport,Ky. N9	8.40	9.35	9.95	10.95	11.85
Niles,O. N12	8.40	9.35	9.95	10.95	....
Vandergrift,Pa. U5	...	9.35	9.95	10.95	11.85
Warren,O. R2	8.40	9.35	9.95	10.95	11.85
Zanesville,O. A10	...	9.35	9.95	10.95	11.85

C.R. COILS & CUT LENGTHS, (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	...	...	10.70	11.70	12.60
GraniteCity,Ill. G4	8.80*	9.80*	10.40*	11.40*	....
IndianaHarbor,Ind. I-2 ..	8.60†	9.60*	10.20*	11.20*	....
Vandergrift,Pa. U5	...	10.10†	10.70†	11.70†	12.60†
Vandergrift,Pa. U5	8.60*	9.60*	10.20*	11.20*	12.10*
Warren,O. R2	8.60†	10.10	10.70	11.70	12.60
Zanesville,O. A10	...	10.10	10.70	11.70	12.60

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	12.80	13.35	13.85	14.85
Brackenridge,Pa. A4	12.80	....	....	....
Newport,Ky. N9	12.80	....	....	....
Vandergrift,Pa. U5	12.80	13.35	13.85	14.85
Zanesville,O. A10	12.80§	13.35§	13.85§	14.85§

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.85	17.45	17.95	13.55§
Butler,Pa. A10	....	....	17.45	17.95	....
Vandergift,Pa. U5	14.85	15.85	17.45	17.95	13.55
Warren,O. R2	....	....	....	....	13.55‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. §Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.7
Aliquippa,Pa. J5	$7.50	$7.75	$
Dravosburg,Pa. U5	7.50	7.75	
Fairfield,Ala. T2	7.60	7.85	
FairlessHills,Pa. U5	7.60	7.85	
Gary,Ind. U5	7.50	7.75	
GraniteCity,Ill. G4	7.60	7.85	
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	
Niles,O. R2	7.50	7.75	
Pittsburg,Calif. C11	8.25	8.50	
SparrowsPoint,Md. B2	7.60	7.85	
Weirton, W.Va. W6.....	7.50	7.75	
Yorkville,O. W10	7.50	7.75	
ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	6.175	....	
Niles,O. R2	6.675	6.875	7.

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5..	8.80	$9.05
Dravosburg,Pa. U5	8.80	9.05
Fairfield,Ala. T2.	8.90	9.15
Fairless,Pa. U5 ..	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind,Har. I-2, Y1.	8.80	9.05
Pitts.,Calif. C11 .	9.55	9.80
Sp.Pt.,Md. B2 ..	8.90	9.15
Warren,O. R2 ..	8.80	9.05
Weirton,W.Va. W6	8.80	9.05
Yorkville,O. W10.	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$6.60
Dravosburg,Pa. U5 ....6.60
Fairfield,Ala. T2 .....6.70
FairlessHills,Pa U5 ....6.70
Gary,Ind. U5 .....6.60
GraniteCity,Ill. G4 ....6.70
Ind.Harbor,Ind. 1-2, Y1.6.60
Niles,O. R2 .....6.60
Pittsburg,Calif. C11 ....7.35
SparrowsPoint,Md. B2 ..6
Warren,O. R2 6
Weirton,W.Va. W6 6
Yorkville,O. W10 6

HOLLOWARE ENAMELING Black Plate (29 Gage)

Dravosburg,Pa. U5 6
Gray,Ind. U5 6
GraniteCity,Ill. G4 6
Ind.Harbor,Ind. Y1 6
Yorkville,O. W10 6

MANUFACTURING TERNES (Special Coated; Base Bo

Dravosburg,Pa. U5 ....$7
Gray,Ind. U5 7

MANUFACTURING TERNES (Light Coated, 6 lb; Base B

Yorkville,O. W10 .....$8

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5 8

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ...6.25
Aliquippa,Pa. J5 .....6.25
Alton,Ill. L1 .....6.425
Atlanta A11 .....6.45
Bartonville,Ill. K4 ....6.35
Buffalo W12 .....6.25
Chicago W13 .....6.25
Cleveland A7 .....6.25
Crawfordsville,Ind. M8..6.35
Donora,Pa. A7 .....6.25
Duluth,Minn. A7 .....6.25
Fairfield,Ala. T2 .....6.25
Fostoria,O.(24) S1 ....6.45
Houston S5 .....6.50
Jacksonville,Fla. M8 ..6.77
Johnstown,Pa. B2 .....6.25
Joliet,Ill. A7 .....6.25
KansasCity,Mo. S5 ....6.50
Kokomo,Ind. C16 .....6.35
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ...6.50
Monessen,Pa. P7 .....6.25
Newark 6-8 ga. I-1 ....6.90
N.Tonawanda B11 ....6.25
Palmer,Mass. W12 .....6.55
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.25
Rankin,Pa. A7 .....6.25
S.Chicago,Ill. R2 .....6.25
S.SanFrancisco C10 ....7.20
SparrowsPoint,Md. B2 ..6.35
Sterling,Ill.(1) N15 ....6.25
Sterling,Ill. N15 .....6.35
Struthers,O. Y1 .....6.25
Waukegan,Ill. A7 ....6.25
Worcester,Mass. A7 ....6.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....7.90
Alton,Ill. L1 .....8.075
Bartonville,Ill. K4 ....8.00
Buffalo W12 .....7.90
Cleveland A7 .....7.90
Donora,Pa. A7 .....7.90
Duluth,Minn. A7 .....7.90
Fostoria,O. S1 .....7.95
Johnstown,Pa. B2 .....7.90
LosAngeles B3 .....8.85
Milbury,Mass.(12) N6 ..8.20
Minnequa,Colo. C10 ....8.15
Monessen,Pa. P16 .....7.90
Muncie,Ind. I-7.....8.10
Palmer,Mass. W12 ....8.20
Pittsburg,Calif. C11 ...8.85
Portsmouth,O. P12 ....7.90
Roebling,N.J. R5 .....8.20
S.Chicago,Ill. R2 .....7.90
S.SanFrancisco C10 ....8.85
SparrowsPt.,Md. B2 ...8.00
Struthers,O. Y1 .....7.90
Trenton,N.J. A7 .....8.20
Waukegan,Ill. A7 .....7.90
Worcester A7,J4,T6,W12.8.20

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....7.60
Alton,Ill. L1 .....7.
Buffalo W12 7
Cleveland A7 7
Donora,Pa. A7 7
Duluth,Minn. A7 7
Johnstown,Pa. B2 7
KansasCity,Mo. S5 7
LosAngeles B3 8
Minnequa,Colo. C10 ...7.
Monessen,Pa. P16 7
NewHaven,Conn. A7 ...7
Palmer,Mass. W12 7
Pittsburg,Calif. C11 8
Portsmouth,O. P12 7
Roebling,N.J. R5 7
S.Chicago,Ill. R2 7
S.SanFrancisco C10 8
SparrowsPoint,Md. B2 ..7
Struthers,O. Y1 7
Trenton,N.J. A7 7
Waukegan,Ill. A7 7
Worcester,Mass. A7 7

WIRE, Fine & Weaving (8"Co

Alton,Ill. L1 .....12.
Bartonville,Ill. K4 12
Buffalo W12 12
Chicago W13 12
Cleveland A7 12
Crawfordsville,Ind. M8.12
Fostoria,O. S1 12
Jacksonville,Fla. M8 ...13
Johnston,Pa. B2 12
Kokomo,Ind. C16 12
Minnequa,Colo. C10 ...12
Monessen,Pa. P16 12
Muncie,Ind. I-7 12
Palmer,Mass. W12 12
Roebling,N.J. R5 12
S.SanFrancisco C10 12
Waukegan,Ill. A7 12
Worcester,Mass. A7, T6.12

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4 10
Buffalo W12 10
Johnstown,Pa. B2 10
Minnequa,Colo. C10 ...10.
Monessen,Pa. P16 10
Muncie,Ind. I-7 10
Pittsburg,Calif. C11 ...11
Portsmouth,O. P12 10
Roebling,N.J. R5 11
SparrowsPt.,Md. B2 ...10

ROPE WIRE

Bartonville,Ill. K4 10
Buffalo W12 10
Fostoria,O.(23) S1 10
Johnstown,Pa. B2 10
Monessen,Pa. P16 10
Muncie,Ind. I-7 10
Palmer,Mass. W12 10
Portsmouth,O. P12 9
Roebling,N.J. R5 10
SparrowsPt. B2 10
Struthers,O. Y1 10
Worcester,Mass. J4 10

(A) Plow and Mild Plow add 0.25c for Improved Plow

WIRE

(Continued)

WIRE, Tire Bead

Bartonville,Ill. K4 .....14.15
Monessen,Pa. P16 .....14.20
Roebling,N.J. R5 .....14.35

WIRE, Cold-Rolled Flat

Anderson,Ind. G6 .....9.00
Baltimore T6 .....9.30
Buffalo W12 .....9.00
Cleveland A7 .....9.00
Crawfordsville,Ind. M8..9.00
Dover,O. G6 .....9.00
Fostoria,O. S1 .....9.00
Franklin Park,Ill. T6 ....9.10
Kokomo,Ind. C16 .....9.00
Massillon,O. R8 .....9.00
Milwaukee C23 .....9.20
Monessen,Pa. P16 .....9.00
Pawtucket,R.I. N8 ....9.30
Riverdale,Ill. A1 .....9.10
Rome,N.Y. R6 .....9.00
Trenton,N.J. R5 .....9.30
Worcester A7, T6, W12.9.30

NAIL, Stock

To Dealers & Mfrs. (7) Col.

AlabamaCity,Ala. R2 ...152
Aliquippa, Pa. J5 152
Atlanta A11 154
Bartonville,Ill. K4 154
Chicago,Ill. W13 152
Cleveland A9 157
Crawfordsville,Ind. M8 ..154
Donora,Pa. A7 152
Duluth,Minn. A7 152
Fairfield,Ala. T2 152
Galveston,Tex. D7 157
Houston,Tex. S5 157
Johnstown,Pa. B2 152
Joliet,Ill. A7 152
KansasCity,Mo. S5 157
Kokomo,Ind. C16 154
Minnequa,Colo. C10 157
Monessen,Pa. P7 152
Pittsburg,Calif. C11 171
Rankin,Pa. A7 152
S.Chicago,Ill. R2 152
SparrowsPt.,Md. B2 154
Sterling,Ill.(1) N15 152
Worcester,Mass. A7 158

NAILS, CUT (100 lb keg)

To Dealers (33)

Conshohocken,Pa. A3 ..$9.05
Wheeling,W.Va. W10 ..9.05

STAPLES, Polished Stock

To Dealers & Mfrs. (7) Col.

Aliquippa,Pa. J5 152
Atlanta A11 154
Bartonville,Ill. K4 154
Crawfordsville,Ind. M8 ..154
Donora,Pa. A7 152
Duluth,Minn. A7 152
Fairfield,Ala. T2 152
Johnstown,Pa. B2 152
Joliet,Ill. A7 152
Kokomo,Ind. C16 154
Minnequa,Colo. C10 157
Monessen,Pa. P7 152
Pittsburg,Calif. C11 171
Rankin,Pa. A2 152
SparrowsPt.,Md. B2 154
Sterling,Ill.(1) N15 152
Worcester,Mass. A7 158

TIE WIRE, Automatic Baler

(14½ Ga.) (Per 97 lb Net Box)

Coil No. 3150

AlabamaCity,Ala. R2 ..$9.35
Bartonville,Ill. K4 .....9.45
Buffalo W12 .....9.35
Crawfordsville,Ind. M8..9.46
Donora,Pa. A7 .....9.35
Duluth,Minn. A7 .....9.35
Johnstown,Pa. B2 .....9.35
Joliet,Ill. A7 .....9.35
Kokomo,Ind. C16 .....9.45
LosAngeles B3 .....10.14
Minnequa,Colo. C10 ....9.60
Pittsburg,Calif. C11 ...10.43
S.Chicago,Ill. R2 .....9.35
SparrowsPt., Md. B2....9.45
Sterling,Ill. N15 .....9.35

Coil No. 6500 Stand.

AlabamaCity,Ala. R2..$9.65
Bartonville,Ill. K4 .....9.75
Buffalo W12 .....9.60
Crawfordsville,Ind. M8..9.75
Donora,Pa. A7 .....9.65
Duluth,Minn. A7 .....9.65
Johnstown,Pa. B3 .....9.65
Joliet,Ill. A7 .....9.65
Kokomo,Ind. C16 .....9.75
LosAngeles B3 .....10.45
Minnequa,Colo. C10 ....9.90
Pittsburg,Calif. C11 ...10.13
S.Chicago,Ill. R2 .....9.65
SparrowsPt.,Md. B2 ....9.75
Sterling,Ill. N15 .....9.65

Coil No. 6500 Interim

AlabamaCity,Ala. R2 ..$9.70
Bartonville,Ill. K4 .....9.80
Buffalo W12 .....9.70
Crawfordsville,Ind. M8 ..9.80
Donora,Pa. A7 .....9.70
Duluth,Minn. A7 .....9.70
Johnstown,Pa. B2 .....9.70
Joliet,Ill. A7 .....9.70
Kokomo,Ind. C16 .....9.80
LosAngeles B3 .....10.50
Minnequa,Colo. C10 ....9.95
Pittsburg,Calif. C11 ...10.50
S.Chicago,Ill. R2 .....9.70
SparrowsPt.,Md. B2 ....9.80
Sterling,Ill. N15 .....9.70

WIRE, Barbed **Col.**

AlabamaCity,Ala. R2..175**
Aliquippa J5 .....172§
Atlanta A11 181
Bartonville,Ill. K4 181
Crawfordsville,Ind. M8 ..181
Donora,Pa. A7 .....175†
Duluth,Minn. A7 .....175†
Fairfield,Ala. T2 .....175†
Houston,Tex. S5 .....180†
Johnstown,Pa. B2 .....179*
Joliet,Ill. A7 .....175†
KansasCity,Mo. S5 ....180†
Kokomo,Ind. C16 .....177†
Minnequa,Colo. C10 ...180**
Monessen,Pa. P7 .....179*
Pittsburg,Calif. C11 ...195†
Rankin,Pa. A7 .....175†
S.Chicago,Ill. R2 .....175**
S.SanFrancisco C10 ...195**
SparrowsPoint,Md. B2 ..181*
Sterling,Ill.(1) N15 ....179*

WOVEN Fence, 9-15 Ga. Col.

Ala.City,Ala. R2 .....162**
Ala.City, 17 ga. R2 ...241**
Ala.City, 18 ga. R2 ...251**
Aliq'ppa,Pa.9-14½ga J5 165§
Atlanta A11 168
Bartonville,Ill. K4 168
Crawfordsville,Ind. M8 ..168
Donora,Pa. A7 .....162†
Duluth,Minn. A7 .....162†
Fairfield,Ala. T2 .....162†
Houston,Tex. S5 .....167†
Johnstown,Pa.(43) B2 ..166
Joliet,Ill. A7 .....162†
KansasCity,Mo. S5 ....167†
Kokomo,Ind. C16 .....164†
Minnequa,Colo. C10 ...167**
Monessen,Pa. 9 ga. P17.166*
Pittsburg,Calif. C11 ...185†
Rankin,Pa. A7 .....162†
S.Chicago,Ill. R2 .....162**
Sterling,Ill.(1) N15 ....166*

WIRE (16 Gage)	An'ld Stone	Galv. Stone
Ala.City R2	..14.50	16.05**
Bartonville K4	..14.60	16.50
Buffalo W12	....14.50	....
Cleveland A7	....14.50	....
Crawf'dsville M8	14.60	16.50
Fostoria,O. S1	..14.60	16.15†
Johnstown B2	..14.15	16.40*
Kokomo C16	...14.60	16.15†
Minnequa C10	..14.75	16.45**
Palmer,MassW12	14.50	16.05*
Pitts.,Calif. C11	14.85	16.40†
S.Chicago R2	..14.50	16.05**
SparrowsPt.	B2.14.60	16.50*
Sterling(1) N15	14.50	16.45††
Waukegan A7	..14.50	16.05†
Worcester A7	....14.80	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	7.40	7.80**
Aliquippa J5	....7.40	7.925§
Atlanta A11	.....7.50	8.075
Bartonville(48) K4	7.50	8.075
Buffalo W12	.....7.40	8.80†
Cleveland A7	.....7.40	....
Crawfordsville M8	7.50	8.075
Donora,Pa. A7	...7.40	7.80†
Duluth,Minn. A7	..7.40	7.80†
Fairfield T2	....7.40	7.80†
Houston,Tex. S5	..7.65	8.05†
Jacksville,Fla. M8	7.90	8.475
Johnstown B2(48)	7.40	7.975*
Joliet,Ill. A7	....7.40	7.80†
KansasCity,Mo. S5	7.65	8.05†
Kokomo C16	.....7.50	7.90†
LosAngeles B3	..8.35	8.925*
Minnequa C10	...7.65	8.05**
Monessen P7 (48)	7.40	7.975*
Palmer,Mass. W12	7.70	8.10†
Pitts.,Calif., C11	..8.35	8.75†
Portsmouth,O. P12	7.40	....
Rankin A7	.....7.40	7.80†
S.Chicago R2	...7.40	7.80**
S.SanFran. C10	.8.35	8.75**
Spar'wsPt.B2(48)	7.50	8.075*
Str'ling(1)(48)	N15	7.40 8.00††
Struthers,O.(48)	Y1	7.40 7.90‡
Worcester,Mass.	A7	7.70 ....

*Based on 12.50c zinc; †5c zinc; §10c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras. ††13c zinc.

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2.	.157
Duluth,Minn. A7	.157
Franklin,Pa. F5	.157
Huntington,W.Va. W7	.157
Johnstown,Pa. B2	.160
Marion,O. P11	.157
Minnequa,Colo. C10	.162
Moline,Ill. R2	.162
S.Chicago,Ill. R2	.157
Tonawanda,N.Y. B12	.157
Williamsport,Pa. S10	.160

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, less case lots, per cent off list, f.o.b. midwestern plants)

4" and shorter:
- ½" & smaller diam... +5

Over 4" through 6":
- ½" and smaller diam. +12

6" and shorter:
- 7/16" and ⅝" ..... +13
- ¾" and larger ..... +16

Longer than 6":
- All diameters ..... +25

Lag bolts, all diams:
- 6" and shorter ..... +2
- Over 6" long ..... +11

Ribbed Necked Carriage. +13
Blank 2
Plow 18
Step, Elevator, Tap and Sleigh Shoe 2
Tire Bolts 12
Boiler & Fitting-Up Bolts 14

NUTS

H.P. and C.P., regular & heavy:
- Square, all sizes 51

H.P., Hex. regular & heavy:
- ¾" and smaller 55
- ⅞" to 1⅛", inclusive. 55
- 1¼" to 1½", inclusive 57
- 1⅝" and larger 51

C.P. Hex regular & heavy:
- ¾" and smaller 55
- Larger than ¾" 51

Hot Galv. Nuts (all types):
- ¾" or smaller 38
- ⅞" to 1½", inclusive. 36

Finished Hex Nuts:
- ¾" and smaller 55
- ⅞" and larger 51

Semifinished & Slotted Hex:
- Regular and heavy, ¾" and smaller 55
- ⅞" and larger 51

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages; plain finish)

3" and shorter:
- ⅛" thru ¼" diam, 25,000 to 200,000 pieces 61
- Over 200,000 pieces. 64
- 5/16" thru ½" diam: 15,000 to 100,000 pieces 61
- 100,000 or more 64

Longer than 3", any diam:
- 5000 to 100,000 pieces 61
- Over 100,000 pieces. 64

SQUARE HEAD SET SCREWS

(1035 steel; packaged; per cent off list)

1" diam x 6" and shorter 19
1" and smaller diam x over 6" ..... List

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6" or shorter:
- ¼" through ½" 34
- 7/16" & ⅝" & shorter.. 31
- ¾", ⅞" through 1 in. 8

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.06	20.41
1¼	13	....	24.94	20.44
1½	13	23.31	27.57	22.60
1¾	13	27.54	32.57	26.71
2	13	30.87	36.51	29.93
2¼	13	34.77	41.12	33.72
2¼	12	37.73	44.63	36.59
2½	12	41.57	49.16	40.31
2¾	12	45.00	53.22	43.65
3	12	47.99	56.76	46.54

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	4.725	4.625	4.675	5.65
Ensley,Ala. T2	4.725	4.625	...	5.65
Fairfield,Ala. T2	...	...	...	5.65
Gary,Ind. U5	4.725	...	...	...
Huntington,W.Va. W7	...	...	...	5.65
IndianaHarbor,Ind. I-2	4.725	4.625	4.675	...
Johnstown,Pa. B2	...	...	...(16)	5.65
Lackawanna,N.Y. B2	4.725	4.625	...	5.65
Minnequa,Colo. C10	4.725	4.625	...	6.15
Steelton,Pa. B2	4.725	4.625	...	...
Williamsport,Pa. S19	...	...	...	5.65

TIE PLATES

Fairfield,Ala. T2 .....5.625
Gary,Ind. U5 .....5.625
Ind.Harbor,Ind. I-2 ...5.625
Lackawanna,N.Y. B2 ..5.625
Minnequa,Colo. C10 ...5.625
Seattle B3 .....5.775
Steelton,Pa. B2 .....5.625
Torronce,Calif. C11 ...5.775

TRACK BOLTS (20) Treated

Cleveland R2 .....12.40
KansasCity,Mo. S5 ....12.40
Lebanon,Pa. B2 .....12.40
Minnequa,Colo. C10 ..12.40
Pittsburgh O3, P14 ....12.40
Seattle B3 .....12.90

AXLES

Ind.Harbor,Ind. S13 ....7.25
Johnstown,Pa. B2 .....7.25

JOINT BARS

Bessemer,Pa. U5 .....5.825
Fairfield,Ala. T2 .....5.825
Ind.Harbor,Ind. I-2 ...5.825
Joliet,Ill. U5 .....5.825
Lackawanna,N.Y. B2 ..5.825
Minnequa,Colo. C10 ...5.825
Steelton,Pa. B2 .....5.825

SCREW SPIKES

Cleveland R2 .....11.90
Pittsburgh O3 .....11.90

STANDARD TRACK SPIKES

Fairfield,Ala. T2 .....7.90
Ind.Harbor,Ind. I-2, Y1.7.90
KansasCity,Mo. S5 .....7.90
Lebanon,Pa. B2 .....7.90
Minnequa,Colo. C10 ....7.90
Pittsburgh J5 .....7.90
Seattle B3 .....8.40
S.Chicago,Ill. R2 .....7.90
Struthers,O. Y1 .....7.90
Youngstown R2 .....7.90

METAL POWDER

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron:	Cents
98+% Fe, annealed.	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.i.f. N. Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N.J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	21.00
Annealed, 99.5% Fe.	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)..	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns..83.00-148.00	
Aluminum:	
Atomized, 500 lb drums, frght. allowed	
Carlots	32.20
Ton lots	34.20
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	39.00-49.00†
Bronze, 5000-lb lots	58.00-61.50†
Copper:	
Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed ...	94.00
Nickel-Silver, 5000-lb lots .....53.25-60.00†	
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302...	94.00
Stainless Steel, 316...	$1.25
Tin 14.50*	
Zinc, 5000-lb lots 18.25-32.00‡	
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over...	4.50
Less than 1000 lb..	4.65
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago Base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 Ga. and heavier.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Deld San Francisco Bay area.
(23) Mild plow, 10.55c.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Delivered in mill zone, 5.10c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.45c H.S.-L.A.
(31) Widths over ⅝-in.; 6.90c for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.25c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv
Aliquippa, Pa. J5	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.5
Ambridge, Pa. N2	6.5	..	10.5	...	13	...	14.5	...	14.5	...	14	...	16.5	...
Lorain, O. N3	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.2
Youngstown Y1	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.2

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.2

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv
Aliquippa, Pa. J5	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Alton, Ill. L1	...	...	....	....	....	....	15.5	+1.75	18.5	2.25	21	5.75	23.5	7
Benwood, W. Va. W10	16.5	+12	7.25	+18.25	+1.75	+26.25	17.5	0.25	20.5	4.75	23	7.75	25.5	7
Butler, Pa. F6	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Etna, Pa. N2	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Fairless Hills, Pa. N3	...	...	....	....	....	....	15.5	+1.75	18.5	2.75	21	5.75	23.5	7
Fontana, Calif. K1	...	...	....	....	....	....	6	+11.25	9	+7.25	11.5	+3.75	14	+2.5
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	16.5	+0.75	19.5	3.25	22	6.75	24.5	8
Lorain, O. N3	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sharon, Pa. S4	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Sharon, Pa. M6	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sparrows Pt., Md. B2	23	+ 5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.2
Youngstown R2, Y1	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Wheatland, Pa. W9	17.5	+11	9	+16.5	0.5	+24	17.5	0.25	20.5	4.25	23	7.75	25.5	9

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv
Aliquippa, Pa. J5	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Alton, Ill. L1	24	8	24.5	8.5	26	8.75	26	8.75	....	...	....	...
Benwood, W. Va. W10	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.7
Etna, Pa. N2	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.7
Fairless Hills, Pa. N3	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+1.2
Fontana, Calif. K1	14.5	+1.5	15	+1	16.5	+0.75	16.5	+0.75	7	+10.75	7	+10.7
Ind. Harbor, Ind. Y1	25	9	25.5	9.5	27	9.75	27	9.75	17.5	+0.25	17.5	+0.2
Lorain, O. N3	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Sharon, Pa. M6	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Youngstown R2, Y1	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Wheatland, Pa. W9	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75

*Galvanized pipe discounts based on current price of zinc (13.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
201	17.00	21.50	....	....	31.00	....	....	42.25	39.00
202	18.25	24.00	31.00	36.25	33.50	36.75	38.75	42.50	42.50
301	17.75	22.25	....	36.75	32.00	38.00	....	44.25	41.00
302	19.00	24.75	32.00	37.25	34.50	38.25	40.25	44.50	44.50
302B	20.25	26.50	33.00	37.25	37.75	38.25	40.25	47.00	47.00
303	....	26.75	34.75	40.00	....	41.00	....	....	....
304	20.25	26.00	33.75	39.00	37.25	40.25	43.00	47.25	47.25
304L	....	....	38.75	44.00	42.25	45.25	48.00	52.25	52.25
305	21.75	28.25	....	39.50	40.25	40.25	43.50	50.25	50.25
308	22.00	29.00	38.50	44.25	41.25	45.50	49.75	52.00	52.00
309	29.50	38.25	46.75	53.50	53.50	54.75	58.25	67.00	67.00
309S	31.50	41.00	51.00	59.00	58.50	60.25	63.75	74.00	74.00
310	37.25	48.00	62.25	72.25	68.50	73.50	75.25	78.75	78.75
314	....	....	....	....	....	....	75.25	....	....
316	31.50	40.25	51.25	59.50	58.25	60.75	64.00	68.25	68.25
316L	....	....	56.25	64.75	63.25	65.75	69.25	73.25	73.25
317	37.25	48.25	62.75	72.75	73.50	74.50	77.00	83.75	83.75
321	25.00	32.00	38.25	44.00	44.25	45.25	49.25	54.25	54.25
18-8CbTa	29.25	38.00	45.75	52.25	53.25	53.50	58.00	66.50	66.50
403	....	....	28.75	32.75	....	34.00	36.25	....	44.00
405	17.50	23.00	26.75	31.00	32.25	32.00	33.75	42.25	42.25
410	15.00	19.50	25.50	29.50	28.00	30.50	31.75	36.25	36.25
416	....	....	26.00	30.00	....	31.00	....	....	....
420	23.50	30.25	31.00	36.00	37.75	37.25	40.75	56.00	56.00
430	15.25	19.75	26.00	30.00	28.75	31.00	32.25	36.75	36.75
430F	....	....	26.50	30.50	....	31.50	....	....	....
431	16.00	20.50	26.50	30.50	29.75	31.50	33.00	38.00	38.00
446	....	....	35.50	40.50	53.25	42.00	43.25	63.25	63.25

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co., Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%
Stainless:			
302	....	....	30.50
304	30.30	36.05	32.50
304-L	32.30	37.95	....
310	41.30	47.00	....
316	35.50	41.40	47.00
316-L	40.00	46.10	....
316-CB	41.15	48.45	....
321	32.00	37.75	37.25
347	34.40	41.40	48.25
405	25.80	33.35	....
410	25.30	32.85	....
430	25.30	32.85	....
Inconel	49.45	65.45	....
Nickel	41.05	55.65	....
Nickel, Low Carbon	43.25	60.05	....
Monel	42.35	56.35	....
Copper*	....	....	46.00

	Strip, Carbon Base, Cold Rolled 10%	Strip, Carbon Base, Cold Rolled Both Sides
Copper*	30.00	38.00

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular carbon	0.275	5%Cr Hot Work	0.430-0.460
Extra Carbon	0.330	W-Cr Hot Work	0.450
Special Carbon	0.390	V-Cr Hot Work	0.470
Oil Hardening	0.430	Hi-Carbon-Cr	0.770

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.090
18.25	4.25	1	4.75	...	2.305-2.475
18	4	2	9	...	2.675-2.677
18	4	2	....	...	1.765
18	4	1	....	...	1.600
13.75	3.75	2	5	...	2.245
13.5	4	3	....	...	1.865
9	3.5	..	....	...	1.180
6	4	2	....	5	1.105
6	4	3	....	6	1.350
1.5	4	1	....	8.5	0.960

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
AlabamaCity,Ala. R2	54.50	55.00‡	....	
Birmingham R2	54.50	55.00‡	....	
Birmingham U6	....	55.00‡	59.00	
Woodward,Ala. W15	54.50	55.00‡	59.00	
Cincinnati, deld.	....	62.70	....	
Buffalo District				
Buffalo H1, R2	58.50	59.00	59.50	60.00
Tonawanda,N.Y. W12	58.50	59.00	59.50	60.00
N.Tonawanda,N.Y. T9	....	59.00	59.50	60.00
Boston, deld.	69.15	69.65	70.15	....
Rochester,N.Y. deld.	61.52	62.02	62.52	....
Syracuse,N.Y. deld.	62.62	63.12	63.62	....
Chicago District				
Chicago I-3	58.50	59.00	59.00	59.50
Gary,Ind. U5	58.50	....	59.00	....
S.Chicago R2	58.50	....	59.00	....
S.Chicago,Ill. Y1	58.50	59.00	59.00	59.50
S.Chicago,Ill. U5, W14	58.50	....	59.00	59.50
Milwaukee, deld.	60.67	61.17	61.17	61.67
Muskegon,Mich. deld.	....	65.30	65.30	....
Cleveland District				
Cleveland A7, R2	58.50	59.00	59.00	59.50
Akron,O., deld.	61.25	61.75	61.75	62.25
Lorain,O. N3	58.50	....	....	59.50
Mid-Atlantic District				
Bethlehem,Pa. B2	60.50	61.00	61.50	62.00
NewYork, deld.	....	64.78	65.28	....
Newark, deld.	63.52	64.02	64.52	65.02
Birdsboro,Pa. B10	60.50	61.00	61.50	62.00
Chester,Pa. C31	54.50	55.00	55.50	...
Philadelphia, deld.	56.16	56.66	57.16	....
Steelton,Pa. B2	60.50	61.00	61.50	62.00
Swedeland,Pa. A3	60.50	61.00	61.50	62.00
Philadelphia, deld.	62.16	62.66	63.16	63.66
Troy,N.Y. R2	60.50	61.00	61.50	62.00
Pittsburgh District				
NevilleIsland,Pa. P6	58.50	59.00	59.00	..
Pittsburgh (N&S sides), Aliquippa, deld.	....	60.37	60.37	60.87
McKeesRocks, deld.	....	60.04	60.04	60.54
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	....	60.66	60.66	61.16
Verona,Trafford, deld.	60.69	61.19	61.19	61.69′
Brackenridge, deld.	60.95	61.45	61.45	61.95
Bessemer,Pa. U5	58.50	....	59.00	59.50
Clairton,Rankin,S.Duquesne,Pa. U5	58.50	....	....	....
McKeesport,Pa. N3	58.50	....	....	59.50
Midland,Pa. C18	58.50	....	....	....

Youngstown District	Basic	No. 2 Foundry	Malle-able	Besse-mer
Hubbard,O. Y1	....	....	59.00	....
Sharpsville,Pa. S6	58.50	....	59.00	59.50
Youngstown Y1	....	....	59.00	59.50
Youngstown U5	58.50	...	....	59.50
Mansfield,O., deld.	63.40	....	63.90	64.40
Duluth I-3	58.50	59.00	59.00	59.50
Erie,Pa. I-3	58.50	59.00	59.00	59.50
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	64.50	65.00	....	....
Geneva,Utah C11	58.50	59.00	...	....
GraniteCity,Ill. G4	60.40	60.90	61.40	....
Ironton,Utah C11	58.50	59.00	....	....
LoneStar,Texas L6	....	55.00*	..	...
Minnequa,Colo. C10	60.50	61.00	61.50	....
Rockwood,Tenn. T3	....	55.00‡	59.00	....
Toledo,O. I-3	58.50	59.00	59.00	59.50
Cincinnati, deld.	64.26	64.76	...	.

*Phos. 0.51-0.75%; $56, Phos. 0.31-0.50%.
‡Intermediate (Phos. 0.31-0.69%), $56.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.05% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson,O. G2, J1	$67.50
Buffalo H1	68.75

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, (Open-hearth & Fdry, freight allowed K2)	87.50
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	90.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$72.50
Steelton,Pa. B2 (Phos. 0.035% max)	66.50
Philadelphia, deld.	70.05
Troy,N.Y. R2 (Phos. 0.035% max)	66.50
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	63.50
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	63.50
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	63.50

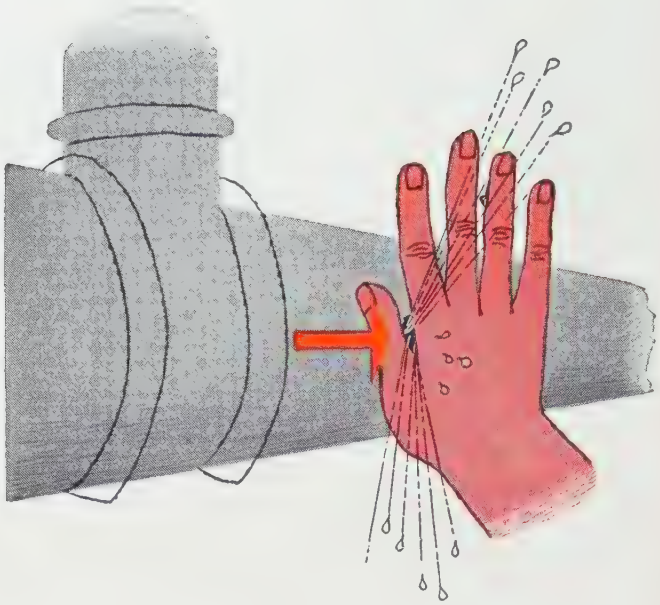
Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 25 cents per 100 lb except: Buffalo, Cleveland, Erie, 30 cents; Moline, Norfolk, Richmond, Washington, 20 cents; Birmingham, Chattanooga, Jackson, 15 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, San Francisco, 10 cents; Atlanta, Houston, Seattle, Spokane, no charge.

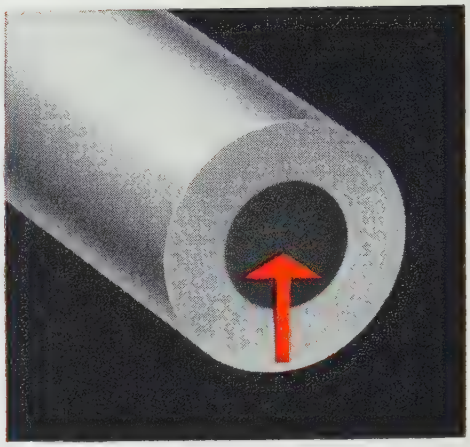
	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	7.14	8.20	8.87	....	7.40	...	7.42	9.39	....	7.63	7.49	9.48
Baltimore	7.03	8.32	9.10	....	7.65	.	7.61	8.62[3]	13.44	7.93	7.21	8.87
Birmingham	6.80	7.90	8.85	....	7.06	.	7.08	9.35	....	7.28	6.99	9.10
Boston	7.70	8.81	10.27	45.67	7.96	. .	7.83	9.53	14.45	8.13	7.89	9.36
Buffalo	6.80	8.05	9.77	....	7.15	.	7.10	7.90	13.10	7.40	7.15	8.70
Chattanooga	6.95	8.10	8.60	....	7.20	.	7.20	9.18	....	7.45	7.25	9.05
Chicago	6.80	8.09	8.50	49.05	7.06	.	7.08	7.75	12.85	7.28	6.99	8.46
Cincinnati	6.92	8.08	8.90	46.10	7.30	.	7.32	8.05	13.09	7.75	7.28	8.71
Cleveland	6.80	8.09	8.85	49.16	7.16	.	7.14	7.85	12.91	7.61	7.16	8.63
Detroit	6.99	8.28	8.78	43.50	7.34	.	7.36	8.04	13.05	7.75	7.27	8.65
Erie, Pa.	6.80	7.90	8.85	....	7.15	.	7.08	7.85	....	7.40	7.15	8.63
Houston	7.85	8.75	10.49	...	8.15	.	8.25	9.85	14.00	8.20	7.80	9.20
Jackson, Miss.	7.10	8.20	9.20	....	7.40	..	7.40	9.44	....	7.60	7.45	9.30
Los Angeles	8.05	10.00	11.00	....	8.35	. .	8.05	11.25	14.25	8.30	8.05	10.25
Milwaukee	6.89	8.18	8.59	....	7.15	...	7.17	7.94	12.94	7.45	7.08	8.55
Moline, Ill.	7.15	8.28	8.85	....	7.41	.	7.43	8.10	....	7.63	7.34	...
New York	7.46	8.68	9.44	44.95	8.07	.	7.96	9.48	13.28	7.99	7.76	9.19
Norfolk, Va.	7.25	...	...	....	7.65	...	7.65	9.50	....	7.95	7.45	8.95
Philadelphia	7.14	8.42	9.35	45.98	7.67	9.02	7.64	8.46	13.16	7.74	7.37	8.69**
Pittsburgh	6.80	8.09	9.20	49.00	7.16	.	7.08	7.85	12.85	7.28	6.99	8.46
Portland, Oreg.	7.80	8.80	10.65	...	8.00		7.95	11.80	15.00	7.85	7.75	9.60
Richmond, Va.	7.00	..	9.47	....	7.65	. .	7.70	8.85	....	7.95	7.20	9.10
St. Louis	7.09	8.38	9.19	43.89	7.35	.	7.37	8.14	13.14	7.68	7.28	8.75
St. Paul	7.46	8.59	9.16	....	7.72	.	7.74	8.51	13.51	7.94	7.65	9.12
San Francisco	8.10	9.65	10.15	51.65	8.35	...	8.05	11.20	14.25[3]	8.25	8.05	10.25
Seattle	8.55	10.40	10.80	54.00	8.65	..	8.35	11.70	14.60	8.30	8.20	10.10
Spokane	8.55	11.00[7]	10.80	....	9.05	..	8.35	11.80	15.35	8.30	8.20	10.60
Washington	7.50	8.79	7.97	....	8.12	...	8.08	9.09	....	8.40	7.68	9.34

Prices do not include gage extras; †prices include gage and coating extras (based on 12.50-cent zinc), except in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **⅛-in. and heavier; ††as annealed; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted; Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; [2]—500 to 9999 lb; [3]—400 to 999 lb; [4]—4000 lb and over; [5] 1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 to 3999 lb; [8]—2000 to 3999 lb; [9]—f.o.b. local delivery in lots of 10,000 lb and over.



a hole here means trouble...



a hole here saves trouble

Crucible Hollow Tool Steel Bars are a great trouble-saver for the metalworking industry. For they eliminate costly, time-consuming drilling, boring, cutting-off or rough-facing operations. And you save production time, machine capacity, and avoid scrap losses . . . for the hole is already in the steel you buy.

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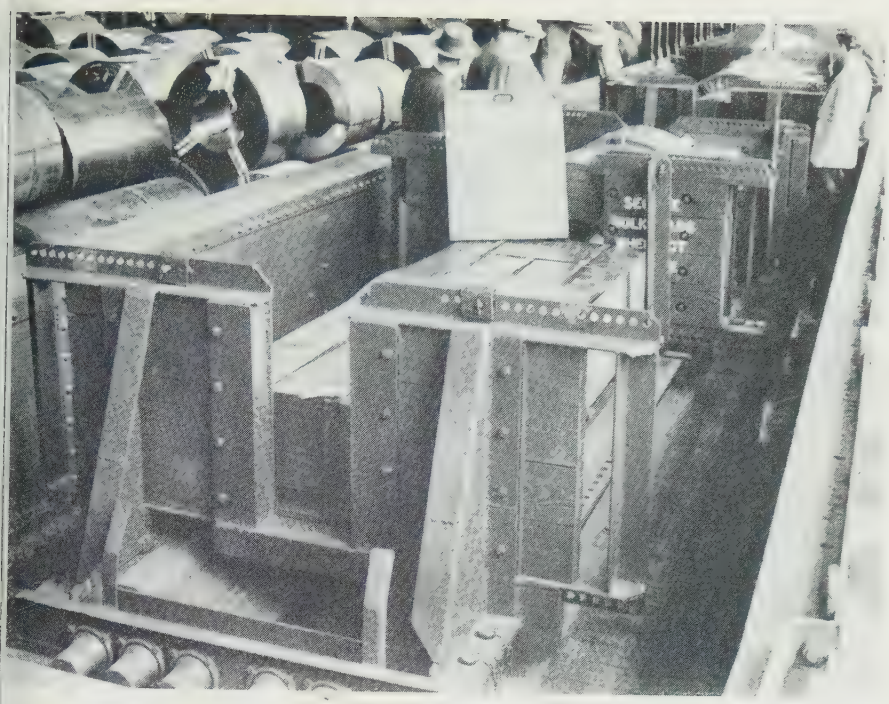
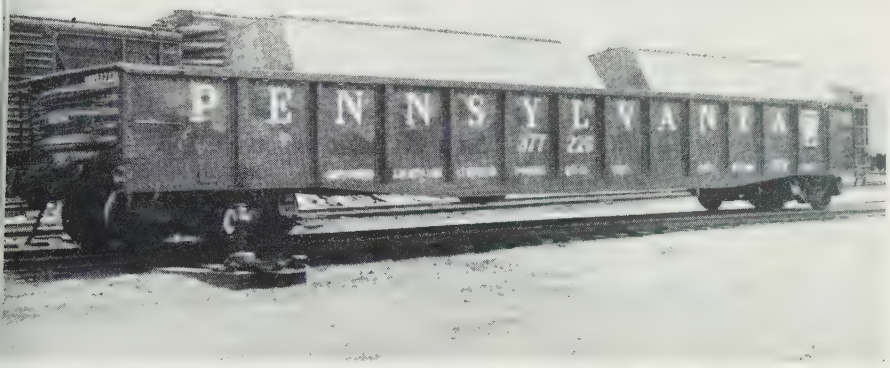
Crucible Steel Company of America



New railroad loading skids hold both coil and sheet



Protective covers are shown in place on gondola car

Steel Shipping Costs Cut

"SAVINGS to the consumer should run about $70 for a full carload of steel." That's how Russell R. Clark, traffic manager for Republic Steel Corp., Cleveland, sums up advantages of the new gondola loading devices being put into service by the Pennsylvania, Chesapeake & Ohio, Nickel Plate, New York Central and other major railroads.

Railroads are pushing the new equipment in an attempt to win back business lost to trucks. It eliminates special wrapping and handling charges (averaging about 5 cents per 100 lb) which steel mills have had to charge on rail-hauled steel sheet and coils. Sheet and strip comprise about 38 per cent of total steel shipments this year.

Planned Performance—Co-ordinated by the Association of American Railroads, the program has been going on since early spring. All major steel-hauling roads have been running trial models under a service proving system. Though no final design will be established, units being put into service will:

1. Eliminate blocking, dunnage and wrapping.
2. Reduce loading and unloading time.
3. Protect steel shipments from the weather.

Details—The Pennsylvania's device is used with standard open cars. It consists of floating skid units (two to a car) which will handle either sheet or coil steel. Design prevents load shifting without blocking.

A removable sheet steel cover is provided for each skid, covering top, ends and sides of the load. Wrapping paper protection is unnecessary. Covers have loops set in the top for easy crane handling. They are insulated and louvered to prevent condensation on the inside and can be stacked during loading or unloading operations.

Acceptance — The Pennsylvania started with 15 of these cars. It expects to have 65 soon. Twenty-eight are in service on the Nickel Plate; the New York Central is expecting its first deliveries this month; and the Chesapeake & Ohio has 25 in service and will add more as demand warrants.

Plates . .

Plate Prices, Page 108

Inquiry for plates is running well in excess of production, with consumers showing increasing interest in first quarter tonnage. One eastern mill has opened books for that delivery, and another may do so shortly. In general, however, the mills are expected to get more current on fourth quarter commitments before taking on new obligations. One eastern producer, in fact, only recently started accepting November shipment tonnage, deferring action on later commitments until deliveries are in better balance with shipment promises.

The Claymont, Del., producer is having some operating difficulty. It scarcely got the larger of its two mills into production recently, after a suspension of several weeks for repairs, when the same mill had another breakdown. It will be back in operation some time this week. This maker is not likely to be much interested in first quarter bookings until it gets its rolling schedules adjusted again.

The railroads and carbuilders continue to exert heavy pressure. The bulk of tonnage sought for the fourth quarter will not be obtainable until after the turn of the year. Shipyard demands are creeping upward, with the probability that needs will be substantial in the first and second quarters of next year.

While Chicago plate sellers note some easing in tight supply conditions, area mills think general improvement is doubtful so long as demand holds at the present high level. All forms of heavy construction are booming, but, except for welded pipe, there is no indication production is being lost for lack of plates. At Pittsburgh, though, users of wide plates are having difficulty getting enough steel to com-

plete projects before the end of the building season. Tonnage promised for October delivery has been pushed back to November and December in some cases. Mill carry-over tonnage in plates matches that in cold-rolled sheets, running a month or more.

Plate mills booking on a monthly basis are under heaviest pressure from fabricating shops taking spot contracts in New England. Some of this work is on the borderline of defense, and, in some cases, consumers are able to wangle tonnage.

Steel Bars . . .

Bar Prices, Page 108

Despite the blanking out of some tonnage in fourth quarter production schedules to care for overflow orders from the third quarter, producers of hot-rolled carbon bars are so oversold they will likely enter the first quarter, next year, with arrearages of three to four weeks.

Barmakers, generally, are delaying formal opening books for first quarter business until they can determine exactly what the carry-over will be at end of the year. One eastern mill shortly may open books for January tonnage. Indications are sellers will, more or less, follow the policy of accepting business on a month-to-month basis until such time as supply and demand are in better balance.

Fabricators continue to report their hot bar suppliers are still cutting fourth quarter allotments. Alloy bar tonnage, however, is available for delivery this year, though schedules are reported filling up, especially on the smaller sizes.

No letup in demand is in evidence. It would take quite a lull in buying to make much impression on mill operations because demand is so greatly in excess of supply. Inquiry for first quarter is developing rapidly.

Tin Plate . . .

Tin Plate Prices, Page 110

The last-minute rush to speed tin plate shipments to consumers before the Oct. 1 price rise, announced in August, had the tin mills in the Pittsburgh and adjoining areas working beyond theoretical capacity last week. Heavy order backlogs made it impossible to complete all shipments before the deadline.

Fourth quarter is expected to see larger tonnage placed than had been expected during the summer. Volume, however, will likely be below that of the third quarter, which was stimulated by the efforts to beat the price increase. Integrated mills can divert to other products any extra ingot tonnage resulting from a slowing down in tin mill operations.

Wire . . .

Wire Prices, Pages 110 & 111

Wiremakers anticipate virtual capacity operations through the remainder of this year, and prospects for the first quarter of next year are promising. Some mills report substantial orders for that delivery period are being received.

Chicago district mills say users of manufacturers wire items, such as springmakers and the heavy industries, are projecting strong manufacturing schedules through November. At the same time, sales of merchant products are expected to quicken—there has been some concern because of the long drouth, but good fence sales are said to be in prospect.

Jobbers of merchant wire items have hesitated to build heavy inventories. They have been depending on quick replacement tonnage. But mills may not be able to give as prompt service as they require in the future. As a result, there is increasing disposition on the part of nail sellers to increase stocks somewhat.

In general, the wire mills are booking substantial order volume for first quarter shipment. No letdown in automotive, spring, heading or high carbon specialty requirements is noted. Pressure is stronger in the East with consumers more disposed to place forward shipment tonnage. Many users apparently are not satisfied with their inventory position and are trying to build stocks.

Wire mill carry-overs are not so heavy as in most other carbon products, except in the case of a few New England mills that suffered considerable flood damage. Rod mill capacity is reported sold out through remainder of this year and lead time on finished wire grades is noticeably more extended.

New England producers' backlogs extend well through remainder of the year on the larger tonnage grades and high carbon specialties. Flood damaged mills are still handicapped, more in finishing departments than in steelmaking. A serious factor is damage to wire in process. District producers say a new output record will be established this year in upholstery wire for bedd coils.

Pittsburgh Steel Co. plans to versify the range of welded w fabric it produces to meet the gr ing demand for a diverse assortm of wire fabric from construction a other industries. Additional fac ties will be installed at the Mon sen, Pa. mill.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 109 & 110

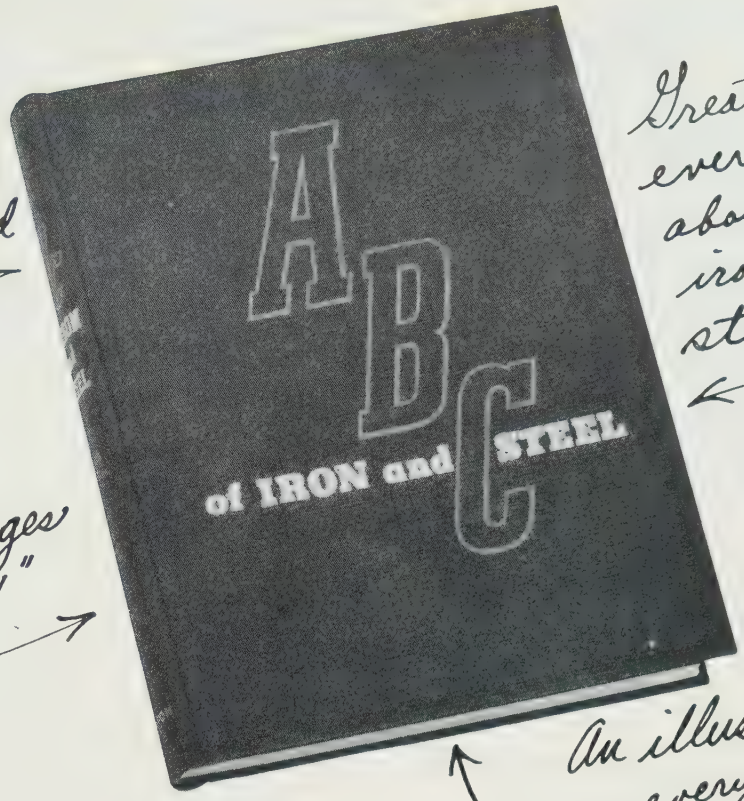
"Our unshipped orders for finish steel products are now at a new hi point. We expect our current pacity operations to continue throu this year and well into 1956."

That comment of Avery C. Adar president, Pittsburgh Steel Co., Pit burgh, about sums up thinking amo sheet producers. They are expecti some reduction in automotive requir ments next year but anticipate pacity production of sheets and st at least through the first quart President Eisenhower's illness caus some uncertainty, but, in general, particular change in business co ditions is seen in the months imme ately ahead.

Buyers are pressing for first qua ter tonnage. They will not get they request. Books have been open by some of the producers for th delivery position. St. Louis mil which opened a few days ago, r port their books are filling rapidl In New England, consumers are pla ing some tonnage for that shipmen All makers, however, are not makin commitments, delaying the form opening of books until they can be ter judge their likely carry-over year end.

Currently, consumers are receivin substantial tonnage from the mill though not all they would like. Su prisingly, in view of the stringency i supply, there has been relatively litt so-called gray market steel around This possibly is explained by the fac little foreign material has been com ing into the country.

Demand for cold-rolled sheets i relentless at Chicago where the pres sure is expected to mount as fourt quarter auto assembly accelerates Wide hot-rolled sheets are in almos as tight supply as cold rolled. De liveries of electrical, enameling an galvanized sheets are extended. I St. Louis, September sheet orde volume was off but only because o restricted bookings by the mills t permit them to catch up with carry over tonnage. Few, if any, sellers o flat-rolled will be current with de liveries by year end. So far as ca be determined, only cold-rolled car bon strip is available for shipment



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this year. Converters in New Englan have openings in December sche ules.

Republic Steel Corp., Cleveland, ha issued revised extra books on ho rolled carbon sheets, 18 gage an heavier, cold-rolled carbon sheets an hot-rolled carbon strip. The new lis are dated Sept. 27. Changes ar minor, largely involving quality ex tras.

Warehouse . . .

Warehouse Prices, Page 113

Warehouse steel inventories con tinue the slow decline shown through out the year. One leading distributo in the East estimates a drop of abou 10 per cent in September.

Plates are almost as tight as struc turals, with low stocks extendin from wide flange beams to smalle angles and channels. Large carbo rounds and some alloy bars also ar tightening. Bottlenecks are being en countered in processing department

Higher nickel grades of stainles are being rationed.

In the St. Louis district, stock are spotty and broken sizewise. Bal ance is the chief problem confrontin distributors there. Plates and struc turals are tight, but oversupplies ar reported in light, flat-rolled products Some sizes of tubing are plentiful others, scarce.

Warehouse business in Septembe ran about the same as in August possibly a shade better. Trading would have been more active if in ventories had been larger and bette balanced.

Los Angeles distributors repor that prices on most steel items wil increase in the fourth quarter. Thi would push quarterly profits to a yearly high, even if an anticipate lag in district sales materializes.

Tubular Goods . . .

Tubular Goods Prices, Page 112

Only a few small sizes of pipe can be ordered for fourth quarter ship ment, reports the sales manager o a major Pittsburgh producer of a wide range of tubular products. Con sumers' fourth quarter demands fo seamless tube in large sizes, line pip and oil country tubular goods ar beyond his company's capacity t produce. Standard pipe and tub specialties appear to be sold out fo the fourth quarter.

Producers in the Pittsburgh area are taking no first quarter orders except for some special products They may be forced to push back some unfilled orders into the firs quarter next year, cutting down ton

age available for new business in hat period.

Normally, large producers of tubuar goods open first quarter order ooks in mid-November. This year, owever, with the delivery situation cute, they may postpone order book pening for several weeks.

New England pipe distributors, uying for replacement, are increasng their orders slightly, with delivries more extended, except on buttveld. Shipment of the latter can e made in about five weeks, includng galvanized pipe. Deliveries on lloy tubing, stainless and specialies, including mechanical pressure ubing, extend well through the ourth quarter. Demand for mehanical tubing is stronger and subtantial requirements for antifricion bearings are maintained. Seamess pipe in the larger sizes is being ooked for first quarter shipment. hipments of large diameter electricveld pipe are more extended due to imited plate supply.

Cast iron pipe demand, following brief lull, again is more active in he Pacific Northwest. Fourth quarer business is expected to be much etter, and may be above normal. ast week, Portland, Oreg. placed n order for 937 tons.

Structural Shapes . . .

Structural Shape Prices, Page 108

Seasonal influences are likely to e more in evidence in the structural teel market from here on. Up to he present, they have not been felt. n fact, there is still a tremendous olume of new work before the maret, including bridge and road conruction, a diversity of commercial nd public building, as well as apartent and office structures. Industial construction is not so active, ut there is more of it than was exected earlier in the year, and there enough work of this nature to ake itself felt at various fabricating nters, notably Pittsburgh.

Fabricators' delivery promises are ell extended—in the East as much six and seven months in some ses (allowing for an exceptional b that might be taken for earlier ipment where it happens to fit well with shop schedules). Conbuting to the extended deliveries, course, is the fact that fabricatg shops are not able to obtain ough plain material to keep their ants operating full at all times. me eastern shops can't do better an four days a week.

Light flange sections are especially arce, and indications are there will no relief on this score over the

Ores

Lake Superior Iron Ore
(Prices effective for the 1955 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports)

Old range bessemer	$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore
Cents per unit, deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore
Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60-68%	20.00
N. African hematite (spot)	nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore
Net ton unit, before duty

Foreign, wolframite, good commercial quality	$33.50
Domestic, scheelite, mine	63.00

Manganese Ore
Mn 48%, nearby, 95c-$1.05 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, 75c-80c.

Chrome Ore
Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $45.00-$50.00
48% 3:1	42.00-44.00
48% no ratio	34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	32.00

Domestic
Rail nearest seller

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.00

Antimony Ore
Per unit of Sb content, c.i.f. seaboard

56-60%	$3.50-$3.75
60-65%	3.75-3.90

Vanadium Ore
Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)
High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $122; Salina, Pa., $127; Niles, O., $133.
Super-Duty: St. Louis, $150.

Silica Brick (per 1000)
Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., Hawston, Pa., $128; Warren, Niles, O., Hays, Pa., $133; Morrisville, Pa., $131.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $138; Lehigh, Utah, $144; Los Angeles, $151.
Super Duty: Hays, Sproul, Hawston, Pa., Warren, Windham, O., Athens, Tex., $145; Morrisville, Pa., Niles, O., $148; Joliet, Ill., $151; Curtner, Calif., $163.

Semisilica Brick (per 1000)
Clearfield, Pa., $139; Philadelphia, $125; Woodbridge, N. J., $122.

Insulating Fire Brick (per 1000)
2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick (per 1000)
Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $88.50; Wellsville, O., $92.50; Clearfield, Pa., Portsmouth, O., $98.

High-Alumina Brick (per 1000)
50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $194; Danville, Ill., $197.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $241; Danville, Ill., $244.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $279; Danville, Ill., $281; Clearfield, Pa., $286.

Sleeves (per 1000)
Reesdale, Johnstown, Bridgeburg, Pa., $157; Clearfield, Pa., $158.50; St. Louis, $169.30.

Nozzles (per 1000)
Reesdale, Pa., $253.70; Johnstown, Pa., $259.20; Clearfield, Pa., $259.40; St. Louis, $259.45; Bridgeburg, Pa., $286.

Runners (per 1000)
Reesdale, Johnstown, Bridgeburg, Pa., $196; Clearfield, Pa., $198; St. Louis, $195.80.

Dolomite (per net ton)
Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, O., Gibsonburg, Narlo, O., $15; Thornton, McCook, Ill., $15.60; Dolly Siding, Bonne Terre, Mo., $14.

Magnesite (per net ton)
Domestic, dead-burned, bulk, ½-in. grains with fines: Chewelah, Wash., $40; Luning, Nev., $40. ⅝-in. grains with fines: Baltimore, $66.40.

Metallurgical Coke

Price per net ton
Beehive Ovens

Connellsville, furnace	$13.25-$14.00
Connellsville, foundry	16.00-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$25.50
Camden, N. J., ovens	25.00
Everett, Mass., ovens	
New England, deld.	*27.05
Chicago, ovens	25.75
Chicago, deld.	27.25
Terre Haute, Ind., ovens	25.50
Milwaukee, ovens	26.25
Indianapolis, ovens	25.50
Portsmouth, O., ovens	24.75
Cincinnati, deld.	27.34
Painesville, O., ovens	26.25
Cleveland, deld.	28.18
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.75
Buffalo, deld.	27.00
Lone Star, Tex., ovens	19.50
Neville Island, Pa., ovens	25.00
Philadelphia, ovens	25.00
Swedeland, Pa., ovens	25.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	25.00
Detroit, ovens	26 25
Detroit, deld.	27.25
Pontiac, deld.	27.81
Saginaw, deld.	29.33

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Ammonium sulphate	$42-$45
Birmingham area	42.00†

†With port equalization against imports.
Cents per pound, producing point
Phenol: Grade 1, 14.00; Grade 2-3, 13.50; Grade 4, 15.50; Grade 5, 14.25.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $38-$39; 70%, $35-$36; 60%, $31-$32. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $34; Mexican, $25.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$52.50
2½	30	33.75
3	40	32.00
4	40	30.25
5⅛	40	30.00
6	60	27.25
7	60	26.75
8, 9, 10	60	24.25
12	72	27.25
14	60	23.50
16	72	22.50
17	60	23.00
18	72	22.50
20	72	22.25

CARBON

8	60	12.10
10	60	11.80
12	60	11.75
14	60	11.70
14	72	10.85
17	60	10.75
17	72	10.35
20	84	10.30
20	90	10.10
24	72, 84	10.30
24	96	10.05
30	84	10.20
40, 35	110	9.90
40	100	9.90

remainder of this year. In fact, appreciable improvement in structural supply is seen by trade leaders until the first quarter of next year.

Reversing a trend of long standing, bids on bridge tonnage in New England are exceeding engineers' estimates. Structural shops with substantial order backlogs, and lacking plain material to cover requirements in most cases, are less willing to bargain and give way to price pressure. Ton for ton, the large volume of structurals required for Connecticut bridges will go at substantially higher prices than prevailed on the 60,000 tons placed for the Massachusetts turnpike.

On the West Coast, the structural market outlook is promising for the fourth quarter, except for a shortage of steel items usually supplied by eastern mills. Structural sales in the area during the first nine months of this year are reported to be almost double those in the like period a year ago.

New work being estimated includes three Texas tower radar islands, bids to the First Naval District, Boston, taking about 6500 tons. The first tower platform, now in place in the Atlantic, was built by Bethlehem Shipbuilding Division, Quincy Yard. For emergency spans, 14 Bailey bridges have been placed in Massachusetts.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 120

Pittsburgh Steel Co. has awarded Koppers Co. Inc. a contract for design and construction of a 19-oven coke battery with auxiliary equipment at its Monessen, Pa. works. The new battery will increase coke carbonizing capacity of the plant 10 per cent, or 144,000 tons annually. The 74 ovens now operated at the point and the new ovens will provide annual capacity of 624,000 tons. Construction of the battery will be completed by June, 1956.

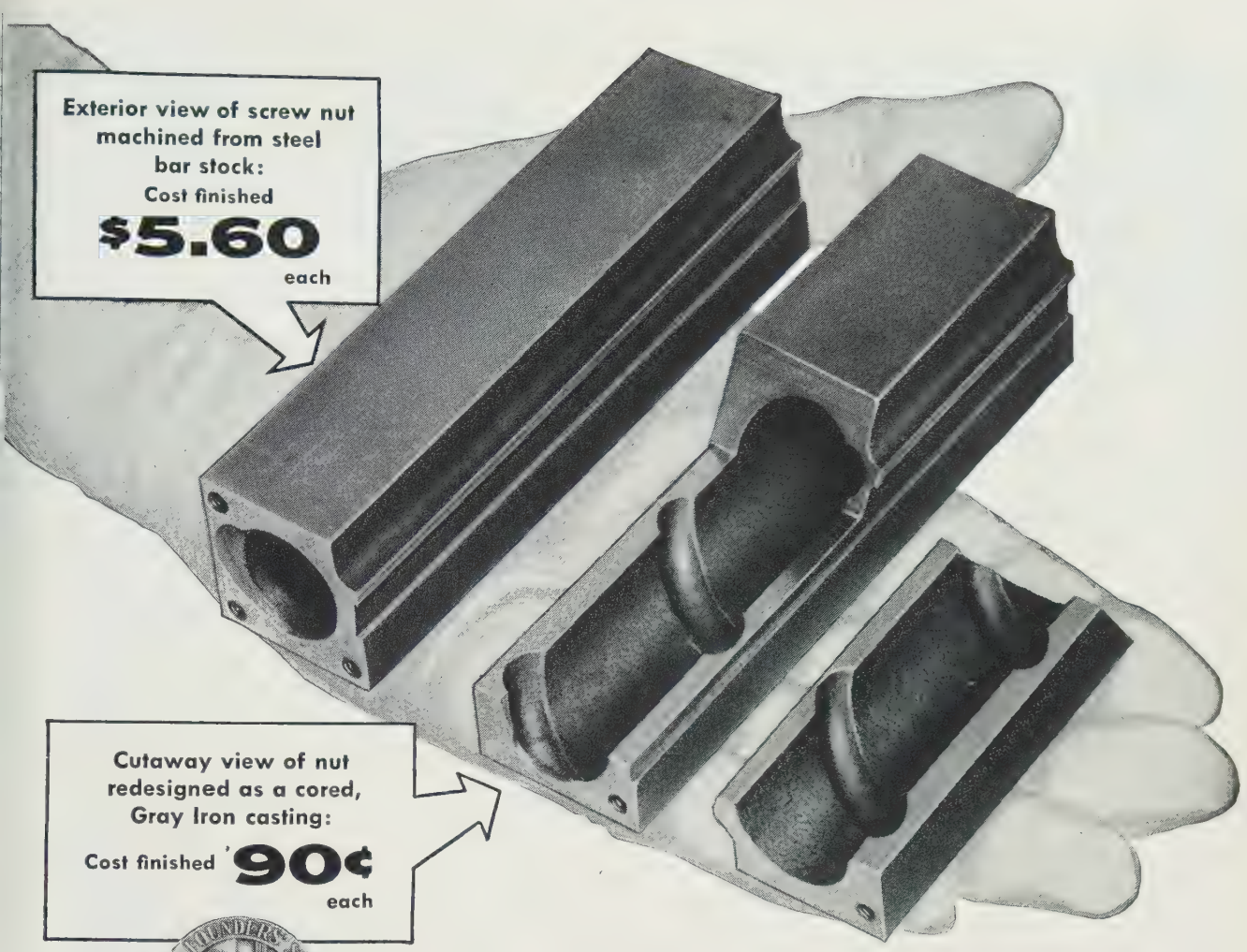
Pig Iron . . .

Pig Iron Prices, Page 113

Pig iron bookings are gaining. Although September business showed some betterment, it did not quite come up to expectations. Sellers are confident of good improvement in October, but whether the uptrend will be accelerated substantially is still a question.

Gray iron foundries in the Midwest view business prospects over the balance of the year as good. Most shops are operating 40 hours a week.

(*Please turn to page* 125)



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City . . . . . State . . . . . .

Signature . . . . . .

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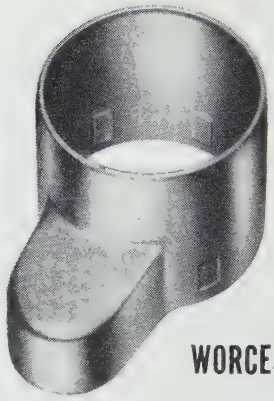

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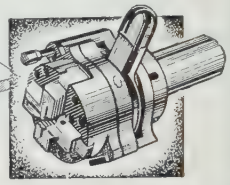

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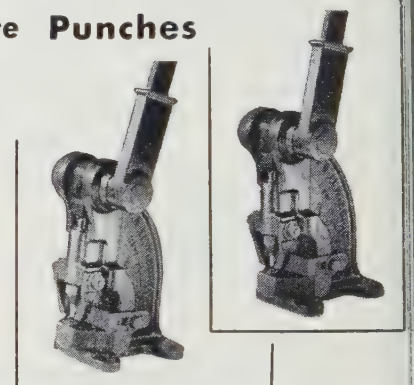

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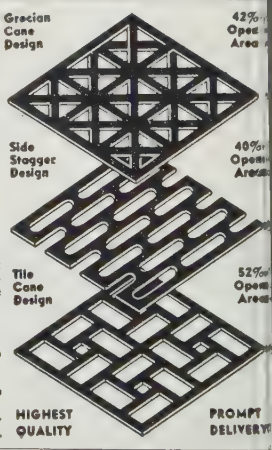

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Current Ferroalloy Quotations

MANGANESE ALLOYS

piegeleisen: (19-21% Mn, 1-3% Si), Carlot
er gross ton $86, Palmerton, Pa.; $87 Clair-
on and Duquesne, Pa.
16 to 19% Mn) $84 per ton, Palmerton, Pa.;
85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7%
pprox.) Base price per net ton $190, Clairton,
Duquesne, Johnstown and Sheridan, Pa.; Alloy,
V. Va.; Ashtabula, Marietta, Philo, O.; Shef-
ield, Ala.; Portland, Oreg., and Tacoma,
Wash. Add or subtract $2.00 for each 1% or
raction thereof of contained manganese over
6% or under 74%, respectively.

Mn 79-81%). Lump $198 per net ton, f.o.b.
naconda or Great Falls, Mont. Add $2.60 for
ach 1% above 81%; subtract $2.60 for each
% below 76%, fractions in proportion to
earest 0.1%.

Low-Carbon Ferromanganese, Regular Grade:
Mn 85-90%). Carload, lump, bulk, max,
.07% C, 29.95c per lb of contained Mn, car-
oad packed 30.7c, ton lots 31.8c, less ton
3c. Delivered. Deduct 1.5c for max 0.15%
grade from above prices, 3c for max 0.30%
, 3.5c for max 0.50% C, and 6.5c for max
5% C—max 7% Si. **Special Grade:** (Mn
0% min, C 0.07% max, P 0.06% max).
dd 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%,
1.25-1.5%, Si 1.5% max). Carload, lump,
ulk 21.85c per lb of contained Mn, packed,
arload 22.9c, ton lot 24.5c, less ton 25.7c.
elivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe
% max, Si 1% max, C 0.2% max): Car-
oad, lump, bulk, 45c per lb of metal; packed,
5.75c; ton lot 47.25c; less ton lots 49.25c.
elivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carloads,
0c; 2000 lb to min carloads, 32c; 250 lb to
999 lb 34c. Premium for hydrogen-removed
netal, 0.75c per lb. Prices are f.o.b. cars,
noxville, Tenn., freight allowed to St. Louis
r to any point east of Mississippi; or f.o.b.
arietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract,
ump, bulk 1.50% C grade, 18-20% Si, 11.2c
er lb of alloy. Packed, c.l. 12.2c, ton 12.65c,
ess ton 13.65c, f.o.b. Alloy, W. Va., Ashta-
ula, O., Marietta, O., Sheffield, Ala., Port-
and, Oreg. For 2% C grade, Si 15-17.5%, de-
uct 0.2c from above prices. For 3% C grade,
i 12-14.5%, deduct 0.4c from above prices.
pot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al
.5% max, Si 4% max, C 0.10% max).
ontract, ton lots 2" x D, $1.50 per lb of
ontained Ti; less ton $1.55. (Ti 38-43%, Al
% max, Si 4% max, C 0.10% max). Ton
ots $1.35, less ton $1.37 f.o.b. Niagara Falls,
. Y., freight allowed to St. Louis. Spot,
dd 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C
-8%). Contract $177 per ton, f.o.b. Ni-
gara Falls, N. Y., freight allowed to destina-
ions east of Mississippi river and north of
altimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C
-4.5%). Contract $195 per ton, f.o.b. Ni-
gara Falls, N. Y., freight not exceeding St.
ouis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l.,
ump, bulk 26.25c per lb of contained Cr; c.l.
acked 27.5c, ton lot 29.25c, less ton 30.65c.
elivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-71%), Con-
act, carload, lump, bulk, C 0.025% max
Simplex) 31.75c per lb contained Cr, 0.02
ax 38.50c, 0.03 max 38c, 0.06 max 36.50c,
1 max 36c, 0.15 max 35.75c, 0.2 max 35.50c,
5 max 35.25c, 1.0 max 34c, 1.5 max 33.85c,
0 max 33.75c. Ton lot, add 3.1c, less ton
dd 4.8c. Carload packed add 1.45c. Delivered.
pot add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-
3%, C 5-7%, Si 7-10%). Contract, c.l. 8 M x
, bulk 27.4c per lb contained Cr. Packed
l. 28.7c, ton 30.5c, less ton 32c. Delivered.
pot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carloads, packed 8 M x D, 19.6c per lb of alloy, ton lot 20.85c; less ton lot, 22.05c, delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome-Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 39.05c per lb of contained Cr; 1" x down, bulk 39.8c. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.2% min, Fe 0.2 max) Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.25 per lb, ton lots $1.27, less ton lots $1.28. Delivered. Spot add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Special Grade** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.20. **High Speed Grade** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1.05 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots, packed, $1.33 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.75c per lb of contained Si. Packed, c.l. 13.85c, ton lot 15.3c, less ton 16.95c. F.o.b. Alloy, W. Va., Ashtabula, O., Marietta, O., Sheffield, Ala., and Portland, Oreg.. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.2c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 14.5c per pound contained silicon. Packed, c.l. 16.2c, ton lots, 18c; less ton, 19.35c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 15.4c per lb of contained Si. Packed c.l. 17.05c, ton lot 18.7c, less ton 19.95c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 18.5c per lb of contained Si. Packed, c.l. 19.95c, ton lot 21.35c, less ton 22.4c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 98% Si, 0.75% max Fe, 0.07 max Ca). C.l. lump, bulk, 20.5c per lb of Si. Packed, c.l. 21.95c, ton lot 23.25c, less ton 24.25c. Add 0.5c for max 0.03 Ca grade. Deduct 0.5c for max 2% Fe grade analyzing min 96.5% Si. Spot, add 0.25c.

Alsifer: (Approx, 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy, ton lots packed 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 8.5c, per lb of alloy. Packed, c.l. 9.5c, ton lot 10.65c, less ton 11.5c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 26.25c per lb of alloy, ton lot 27.4c, less ton 28.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5%-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 22c per lb of alloy, carload packed 23.05c, ton lot 24.95c, less ton 25.95c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 21.5c per lb of alloy, carload packed 22.95c, ton lot 25.25c, less ton 26.75c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3⅜ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.95c per lb of briquet, carload packed in box pallets 17.15, in bags 17.85c; 3000 lb to c.l. in box pallets 18.35c; 2000 lb to c.l. in bags, 19.05c; less than 2000 lb in bags 19.95c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.1c per lb of briquet, c.l. packed, pallets 12.3c, bags 13.1c; 3000 lb to c.l., pallets, 13.5c; 2000 lb to c.l., bags, 14.3c, less ton 15.2c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.7c per lb of briquet, c.l. packed, pallets, 12.9c; bags 13.7c, 3000 lb to c.l., pallets, 14.1c; 2000 lb to c.l., bags, 14.9c; less ton 15.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.75c per lb of briquet; packed, pallets, 6.95c; bags, 7.75c; 3000 lb to c.l., pallet, 8.55c; 2000 lb to c.l. bags 9.35c; less ton 10.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.9c. Packed, pallets 7.1c; bags 7.9c; 3000 lb to c.l. pallets 8.7c; 2000 to c.l. bags 9.5c; less ton 10.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.45 per lb of contained W; 2000 lb W to 5000 lb W, $3.55; less than 2000 lb W, $3.67, delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.80-$6.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb plus Ta 60% min C 0.30% max). Ton lots, 2" x D, $4.65 per lb of contained Cb plus Ta, deld.; less ton lots $4.70.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carloads packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, c.l. packed, ½" x 12 M, 18.5c per lb of alloy, ton lots 19.65c, less ton 20.9c. Deld. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18.5c per lb of alloy, ton lots 19.65c; less ton lots 20.9c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 17.2c per lb of alloy; ton lots 18.7c; less ton lots 19.95c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal, Fe). Lump, carload, bulk 16.50c. Packed c.l. 17.50c, 2000 lb to c.l. 18.50c, less than 2000 lb 19c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn. $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., $1.46 in all sizes except powdered which is $1.57; Washington, Pa., furnace, any quantity $1.46.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.25 in cans; in bags, $1.24, f.o.b. Langeloth, Pa.; Washington, Pa. $1.24.

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PATTERN 6-WL SHOWN

★ *Lower Costs*
★ *Increased Strength*
★ *Improved Appearance*
★ *Reduced Maintenance*

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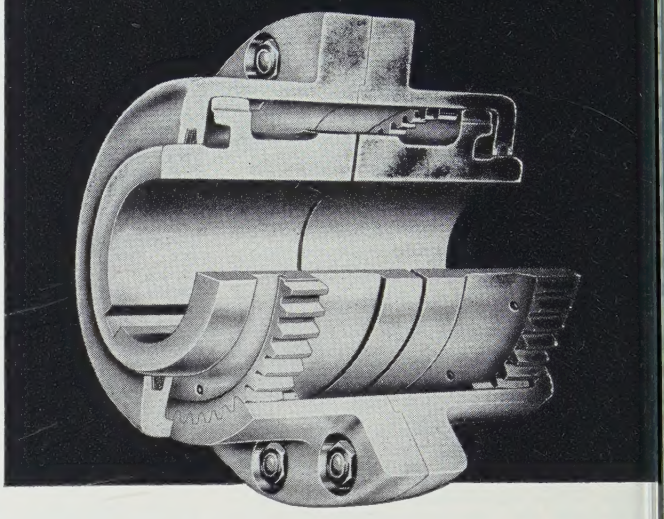

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POOLE FOUNDRY & MACHINE COMPANY — WOODBERRY, BALTIMORE, MD.

TOLEDO STAMPINGS

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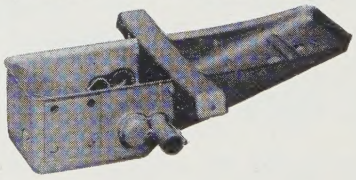

Toledo Stamping and Manufacturing Co.

90 Fearing Blvd., Toledo, Ohio

Detroit Office: 14225 Schaefer Road, Detroit 27, Michigan
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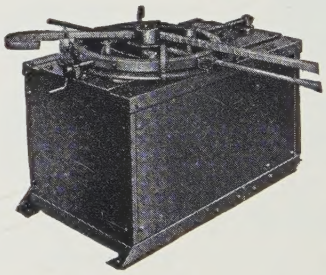
KARDONG FOUR-WAY BENDER

For Concrete Reinforcing Bars

Model D-2



The Model D-2 Kardong Bender is a Four Direction Horizontal Bender. With this bender it is not necessary to turn bars over to make reverse or second bends on beam bars. The Model D-2 is made in two sizes, Model D-2 Standard 6-inch, which will bend bars around collars 2-inch to 6-inch, and Model D-2 Special 8-inch, which will bend bars around collars 2-inch to 8-inch. Capacity of both models, 1¼-inch Square Bars. The Model D-2 is a production bender for reinforcing steel fabricating shop. Ask for catalog of our complete line of reinforcing bar benders.

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ARTUS PLASTIC SLITTING MACHINE SHIMS

COST JUST A FRACTION OF METAL SPACERS

THE COLOR TELLS THE THICKNESS

ALWAYS RETAINS UNIFORMITY AND EVENNESS UNDER ALL NORMAL CONDITIONS

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INTRODUCTION TO THE STUDY OF HEAT TREATMENT OF METALLURGICAL PRODUCTS

By Albert Portevin

Fundamental knowledge and essential principles of heat treatment of steel are presented in simple and understandable manner. Research engineers, metallurgical students and steel plant metallurgists engaged in metallurgical investigations and the heat treatment of ferrous and non-ferrous metals will find this book of inestimable value.

246 pages — **4 tables**
69 illustrations — **Price $5.00 Postpaid**

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(*Concluded from page* 120)

r better; order backlogs range from minimum of three weeks to a aximum of six months. Operations the Chicago district average about 5 per cent of capacity.

In the East, foundry operations are efinitely improved. Foundry coke ipments, which are regarded by me interests as a more accurate age of business than the movement of pig iron, are the highest that district in possibly six months. ctivity in the import and export arkets is nil.

Contributing to the heavier demand for pig iron are higher prices foundry scrap.

Pig iron supplies in the St. Louis istrict have caught up with local emand. Bookings have been restricted largely to regular customers. his is permitting Granite City Steel o. to stockpile sufficient tonnages satisfy customers' needs during ne projected shutdown of one of its wo blast furnaces in January for elining.

Scrap . . .

Scrap Prices, Page 126

Pittsburgh — Large purchases of o. 1 heavy melting steel continue cking. Despite the dullness, the arket is considered strong with raders anticipating high-level fourth uarter steelmaking operations. tainless steel scrap demand is extremely strong, with sales of 18-8 undles and solids reported as high s $285 a ton. Cast iron grades have allied from the mid-September deline and are quoted, on the average, 1 a ton higher.

Boston—District steelworks have esumed buying steel scrap, paying 37, shipping point, within the $5 eight area, or 50 cents higher than ne going price on scrap destined for astern Pennsylvania. For dock, export, $38 is offered for No. 1 steel nd bundles. Sheared low phos rade of steel is quoted at $39, shipng point, for district consumption. hipments of No. 2 steel grades are rgely to eastern Pennsylvania; so No. 1 busheling.

New York — Brokers have advanced their buying prices for prime pen-hearth grades of scrap to $41-42. They are offering to pay $32-33 for No. 2 bundles. Prices for ixed borings and turnings have een stepped up to $21-$22; low phos ructural and plate, to $42-$43. usiness is good, both on domestic nd export account. The market untertone is strong.

Buffalo—Steady tendencies prevail the local scrap market. Dealers report sufficient supplies are available to meet recent commitments. Prices are unchanged.

Chicago—The stronger tone which has been developing in scrap has broken through consumer resistance to higher prices and nearly all important grades are up about $2 a ton. For some railroad specialties, the increases are as much as $3 to $4 a ton. The upsurge also carried cast iron grades up $1 to $3 a ton. Market bullishness has embraced dealer material which for some time has been of little interest to steelmakers.

Philadelphia—Most grades of steel scrap are strong, but prices are unchanged. The Fairless Hills, Pa. consumer recently bought a limited tonnage of No. 1 grade heavy melting, bundles and busheling at $47, delivered, the same price it paid previously. This left the market unchanged on these grades at $46-$47. It is estimated that the mill's latest purchase involved about 10,000 tons, less than the 15,000 tons of No. 2 bundles it had bought a couple weeks previously.

Low phos structurals and plate are higher at $49-$50, delivered, the outside price applying to the shorter

(*Please turn to page* 128)

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported STEEL. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Sept. 28	$45.00
Sept. 21	44.33
Aug. Avg.	43.97
Sept. 1954	29.94
Sept. 1950	40.93

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer's plant)

No. 1 heavy melting..	43.00-44.00
No. 2 heavy melting..	39.00-40.00
No. 1 bundles	43.00-44.00
No. 2 bundles	35.00-36.00
No. 1 busheling	43.00-44.00
Machine shop turnings	29.00-30.00
Mixed borings, turnings	29.00-30.00
Short shovel turnings..	32.00-33.00
Cast iron borings	32.00-33.00
Cut structurals, 3 ft lengths	49.00-50.00
Heavy turnings	42.00-43.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	48.00-49.00

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Charging box cast	*38.00-39.00*
Heavy breakable cast	*38.00-39.00*
Unstripped motor blocks	29.00-30.00
No. 1 machinery cast	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00
Rails, 2 ft and under..	54.00-55.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths..	51.00-52.00
Railroad specialties....	53.00-54.00

Stainless Steel Scrap

18-8 bundles & solids	*270.00-285.00*
18-8 turnings	*130.00-140.00*
430 bundles & solids	*100.00-110.00*
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumer's plant)

No. 1 heavy melting..	43.50-44.50
No. 2 heavy melting..	32.00-33.00
No. 1 bundles	43.50-44.50
No. 2 bundles	29.00-30.00
No. 1 busheling	43.50-44.50
Machine shop turnings	23.00-24.00
Mixed borings, turnings	27.50-28.50
Short shovel turnings..	27.50-28.50
Cast iron borings	27.50-28.50
Low phos.	45.00-46.00
Cut structural plates 2 ft and under	47.00-48.00
Alloy free, short shovel turnings	31.00-32.00
Electric furnace bundles	43.50-44.50

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	40.00-41.00
Stove plate	46.00-47.00
Heavy breakable cast..	37.00-38.00
Unstripped motor blocks	29.00-30.00
Brake shoes	35.00-36.00
Clean auto cast	48.00-49.00
Burnt cast	37.00-38.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	51.00-52.00
Rails, 2 ft and under..	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths..	50.00-51.00
Cast steel	46.00-47.00
Railroad specialties....	52.00-53.00
Uncut tires	47.00-48.00
Angles, splice bars	53.50-54.50
Rails, rerolling	60.00-61.00

Stainless Steel
(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	275.00-280.00
18-8 turnings	130.00-140.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer's plant)

No. 1 heavy melting..	46.00-47.00
No. 2 heavy melting..	35.00-36.00
No. 1 bundles	46.00-47.00
No. 2 bundles	32.00-33.00
No. 1 busheling	46.00-47.00
Machine shop turnings.	24.00-25.00
Short shovel turnings..	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	46.00-47.00
Electric furnace bundles	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00

CHICAGO

No. 1 heavy melting	*44.00-46.00*
No. 2 heavy melting	*36.00-37.00*
No. 1 factory bundles	*46.00-47.00*
No. 1 dealer bundles	*43.00-44.00*
No. 2 bundles	31.00-32.00
No. 1 busheling	*44.00-46.00*
Machine shop turnings.	29.00-30.00
Mixed borings, turnings	29.00-30.00
Short shovel turnings	*31.00-32.00*
Cast iron borings	*31.00-32.00*
Cut structurals, 3 ft	*47.00-48.00*
Punchings & plate scrap	*48.00-49.00*

Cast Iron Grades

No. 1 cupola	*48.00-49.00*
Stove plate	37.00-38.00
Unstripped motor blocks	34.00-35.00
Clean auto cast	51.00-52.00
Drop broken machinery	51.00-52.000

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00
R.R. malleable	*54.00-55.00*
Rails, 2 ft and under	*59.00-60.00*
Rails, 18 in. and under	*60.00-61.00*
Angles, splice bars	*56.00-57.00*
Rails, rerolling	*65.00-66.00*

Stainless Steel Scrap

18-8 bundles & solids	290.00-300.00
18-8 turnings	160.00-170.00
430 bundles & solids	100.00-105.00
430 turnings	45.00-50.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting..	40.00
No. 2 heavy melting..	30.00
No. 1 bundles	40.00
No. 2 bundles	29.00
No. 1 busheling	40.00
Machine shop turnings	22.50
Mixed borings, turnings	22.50
Short shovel turnings	25.50
Punchings & plate scrap	45.50

Cast Iron Grades

Charging box cast	32.00
No. 1 cupola	39.00
Stove plate	32.00
Heavy breakable	32.00
Unstripped motor blocks	22.00
Clean auto cast	42.00
Malleable	35.00

BIRMINGHAM

No. 1 heavy melting...	36.00-37.00
No. 2 heavy melting...	32.00-33.00
No. 1 bundles	36.00-37.00
No. 2 bundles	28.00-29.00
No. 1 busheling	36.00-37.00
Cast iron borings	17.00-18.00
Short shovel turnings..	26.00-27.00
Machine shop turnings.	23.00-24.00
Electric furnace bundles	37.00-38.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	47.50-48.00
Stove plate	44.50-45.50
Bar crops and plate...	42.00-43.00
Structural plate, 2 ft...	41.00-42.00
Unstripped motor blocks	36.00-37.00
Charging box cast	28.00-29.00
No. 1 wheels	38.00-39.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 18 in. and under	*56.00-57.00*
Rails, rerolling	53.00-54.00
Rails, random lengths..	50.00-51.00
Angles, splice bars	50.00-51.00

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting...	46.00-47.00
No. 2 heavy melting...	40.00-41.00
No. 1 bundles	46.00-47.00
No. 2 bundles	37.00-39.00
No. 1 busheling	46.00-47.00
Electric furnace bundles	47.50
Machine shop turnings.	28.00-28.50
Mixed borings, turnings	27.00-28.00
Short shovel turnings ..	30.50-31.00
Structurals & plate	*49.00-50.00*
Heavy turnings	42.00
Couplers, springs, wheels	51.00
Rail crops, 2 ft & under	58.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Malleable	*58.00*
Heavy breakable cast..	45.00-46.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*41.00-42.00*
No. 2 heavy melting..	37.00-38.00
No. 1 bundles	40.50-41.50
No. 2 bundles	*32.00-33.00*
Machine shop turnings.	20.00-21.00
Mixed borings, turnings.	*21.00-22.00*
Short shovel turnings..	22.00-23.00
Low phos. (structural & plate)	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	34.50
Unstripped motor blocks	25.00-26.00
Heavy breakable	38.00-39.00

Stainless Steel

18-8 sheets, clips, solids	280.00-285.00
18-8 borings, turnings.	150.00-160.00
430 sheets, clips, solids	115.00-120.00
410 sheets, clips, solids	100.00-105.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting..	36.00-37.00
No. 2 heavy melting	*30.00-31.00*
No. 1 bundles	35.50-36.50
No. 2 bundles	*26.50-27.50*
Machine shop turnings.	18.50-19.00
Mixed borings, turnings	21.50-22.00
Short shovel turnings..	22.50-23.00
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast.	35.00-36.00

BUFFALO

No. 1 heavy melting...	38.00-39.00
No. 2 heavy melting..	35.00-36.00
No. 1 bundles	38.00-39.00
No. 2 bundles	32.00-33.00
No. 1 busheling	38.00-39.00
Mixed borings, turnings	28.00-29.00
Machine shop turnings.	26.00-27.00
Short shovel turnings..	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	45.00-46.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths.	47.00-48.00
Rails, 2 ft and under.	51.00-52.00
Railroad specialties....	48.00-49.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting ..	40.00-41.00
No. 2 heavy melting...	34.00-35.00
No. 1 bundles	40.00-41.00
No. 2 bundles	31.00-32.00
No. 1 busheling	40.00-41.00
Machine shop turnings.	26.00-27.00
Mixed borings, turnings	23.00-24.00
Short shovel turnings..	29.00-30.00
Cast iron borings	23.00-24.50
Low phos., 18 in.	47.00-48.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast..	38.00-39.00
Charging box cast	38.00-39.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt	43.00-44.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths..	49.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting..	36.00
No. 2 heavy melting..	34.00
No. 1 bundles	36.00
No. 2 bundles	29.00
Machine shop turnings	*27.00*
Short shovel turnings..	27.00

Cast Iron Grades

No. 1 cupola	*46.00*
Charging box cast	39.00
Heavy breakable cast..	36.00
Unstripped motor blocks	35.00
Brake shoes	36.00
Clean auto cast	46.00
Stove plate	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00*
Rails, 18 in. and under	55.00
Rails, random lengths	*50.00*
Rails, rerolling	*64.00*
Angles, splice bars	*51.00*

SEATTLE

(Delivered consumer's plant)

No. 1 heavy melting	*39.00*
No. 2 heavy melting	*35.00*
No. 1 bundles	*35.00*
No. 2 bundles	*30.00*
No. 3 bundles	19.00
Machine shop turnings.	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings..	15.00-16.00
Electric furnace, No. 1.	42.00-44.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	35.00
Heavy breakable cast..	30.00
Unstripped motor blocks	29.00
No. 1 wheels	35.00
Stove plate (f.o.b. plant)	25.00
Brake shoes	28.00-29.00

Railroad Scrap
(Delivered consumer's plant)

Rails, random lengths..	33.00

LOS ANGELES

No. 1 heavy melting..	32.00
No. 2 heavy melting..	30.00
No. 1 bundles	32.00
No. 2 bundles	*27.00*
Machine shop turnings.	10.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	43.00-45.00

SAN FRANCISCO

No. 1 heavy melting..	34.00
No. 2 heavy melting..	32.00
No. 1 bundles	34.00
No. 2 bundles	29.00
No. 1 busheling	34.00
Machine shop turnings.	14.00
Mixed borings, turnings	14.00
Short shovel turnings..	16.00
Cast iron borings	16.00
Cut structurals	36.00
Heavy turnings	14.00
Punchings & plate scrap	34.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast..	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting..	38.00
No. 2 heavy melting..	35.00
No. 1 bundles	38.00
No. 2 bundles	32.00
Mixed steel scrap	32.00
Mixed borings, turnings	17.00
Rails, remelting	47.00
Busheling, new factory: Prepared	36.00
Unprepared	32.00
Short steel turnings	21.00

Cast Iron Grades†

No. 1 machinery cast..	42.00-45.00

†F.o.b., shipping point.